

स्वच्छ महाराष्ट्र अभियान (नागरी) अंतर्गत राज्यातील नागरी स्थानिक स्वराज्य संस्थांकडील शौचालयांच्या सेप्टीक टँक मधील मैल्याचे सुरक्षित, नियमित व्यवस्थापन करून व त्यावर प्रकीया करण्यासाठी हायब्रिड कोअर टेक्नॉलॉजी या तंत्रज्ञानास शासन मान्यता देण्याबाबत.

महाराष्ट्र शासन  
नगर विकास विभाग

शासन निर्णय क्रमांक : स्वमअ-२०२०/प्र.क्र.८५/नवि ३४

हुतात्मा राजगुरु चौक, मादाम कामा मार्ग,  
४ था मजला, मंत्रालय, मुंबई ४०००३२  
दिनांक : १९ एप्रिल, २०२१

पहा :

१. शासन निर्णय, नगर विकास विभाग, क्र स्वभाअ २०१५/प्र.क्र.२३/नवि ३४ दि. १५.०५.२०१५
२. शासन परिपत्रक, नगर विकास विभाग, क्र स्वमअ २०१७/प्र.क्र.३१/नवि-३४, दि. १७.३.२०१७
३. शासन परिपत्रक, नगर विकास विभाग, क्र स्वमअ २०१७/प्र.क्र.२६३/नवि-३४, दि. ३०.१२.२०१७
४. शासन निर्णय, नगर विकास विभाग, क्र. स्वमअ २०१७/प्र.क्र.२६३/नवि-३४, दि. १५.१२.२०१८
५. शासन निर्णय, नगर विकास विभाग, क्र-स्वमअ-२०१९/प्र.क्र.८२/नवि ३४, दि. २४.०५.२०१९
६. शासन निर्णय, नगर विकास विभाग, क्र-स्वमअ-२०१९/प्र.क्र.१०५/नवि ३४, दि. ११.०९.२०१९
७. शासन निर्णय क्रमांक, नगर विकास विभाग, क्र-स्वमअ-२०१९/प्र.क्र.१२४/नवि ३४ दि. ८.११.२०१९

प्रस्तावना :

केंद्र शासनाच्या स्वच्छ भारत अभियानाच्या धर्तीवर संदर्भीय क्रमांक १ येथील शासन निर्णयान्वये राज्यामध्ये स्वच्छ महाराष्ट्र अभियानाची अंमलबजावणी सुरु आहे. या अभियानांतर्गत शहरांमधील ज्या कुटुंबांकडे शौचालयाची सुविधा नाही अशा कुटुंबियांना वैयक्तिक अथवा सामुदायीक शौचालयाची सुविधा उपलब्ध करून देवून शहरे “हागणदारी मुक्त” करणे, तसेच, घनकचरा व्यवस्थापन नियम, २०१६ नुसार शहरातील घनकचरा व्यवस्थापन करून शहरे “स्वच्छ” करणे या दोन प्रमुख बाबींचा समावेश आहे.

२. स्वच्छ महाराष्ट्र अभियानांतर्गत शहरे हागणदारी मुक्त करताना शहरांमधील ज्या भागात मलनिसःरण व्यवस्था अस्तित्वात आहे अशा भागातील शौचालये मैला व्यवस्थापनाच्या दृष्टिने मलनिसःरण व्यवस्थेस जोडण्यात आली आहेत. तर, जेथे मलनिसःरण व्यवस्था अस्तित्वात नाही अशा भागातील / शहरांमधील शौचालये सेप्टीक टँकला जोडण्यात आली आहेत. जी शौचालये मलनिसःरण व्यवस्थेस जोडण्यात आली आहेत त्या शौचलयांमधील मैल्यावर संबंधित शहरांतील मलनिसःरण प्रक्रिया केंद्रामध्ये (STP) प्रक्रीया होत आहे. परंतु, शहरातील ज्या भागात / ज्या शहरांमध्ये मलनिसःरण व्यवस्था उपलब्ध नसल्याने जी शौचालये सेप्टीक टँकला जोडण्यात आली आहेत अशा भागातील / शहरांतील शौचालयांच्या सेप्टीक टँक मधील मैला सुरक्षित व नियमित व्यवस्थापन करून त्यावर प्रक्रीया करणे आवश्यक आहे.

३. राज्यातील ३८४ शहरांपैकी ७३ शहरांमधील शौचालयांच्या सेप्टीक टँक मधील मैला सुरक्षित व नियमित व्यवस्थापन करून त्यावर प्रक्रीया होत आहे. उर्वरीत ३११ शहरांमधील सेप्टीक टँक मधील मैला सुरक्षित व नियमित व्यवस्थापन करून प्रक्रीया करणे आवश्यक असल्याने त्यासाठी योग्य तंत्रज्ञान निवडून त्या तंत्रज्ञानाची अंमलबजावणी करणे आवश्यक असल्याने स्वच्छ महाराष्ट्र अभियान अंतर्गत पर्यावरण नियोजन व तंत्रज्ञान केंद्र, अहमदाबाद (Centre for Environmental Planning and Technology (CEPT)) ह्या संस्थेबोरोबर झालेल्या

सामंजस्य करारा (MoU) अंतर्गत या संस्थेने सेप्टीक टँक मधील मैल्यावर प्रक्रिया करण्यासाठी स्लज ड्राईंग बेड (एस.डी.बी) हे तंत्रज्ञान निवडून त्यावर आधारित सेप्टीक टँक मधील मैल्यावर प्रक्रिया केंद्र (FSTP) उभारण्याकरीता संदर्भ क्र. ७ येथील दि. ८.११.२०१९ रोजीच्या शासन निर्णयान्वये मान्यता देण्याता आली आहे.

४. दरम्यानच्या कालावधीत Scheduled Desludging चा पर्याय पुढे आलेला असून त्यानुसार, शहरातील मैल्यावर प्रक्रिया करावयाची झाल्यास प्रत्येक शहराला जास्त क्षमतेचे F S T P प्रकल्प उभारावे लागणार असून जागेच्या कमतरतेअभावि नविन तंत्रज्ञानाची गरज आहे. सद्या मान्य असलेल्या तंत्रज्ञानाची अंमलबजावणी करीत असताना असे दिसून आले की, सदर प्रकल्प राबविण्याकरीता जास्त जागेची आवश्यकता लागते. सद्यस्थितीत राज्यातील काही नागरी स्थानिक स्वराज्य संस्थेकडे स्वमालकीची जागा उपलब्ध नाही. त्यामुळे, कमी जागेमध्ये राबविणे शक्य होणाऱ्या हायब्रिड कोअर टेक्नॉलॉजी या तंत्रज्ञानास मान्यता देण्याची बाब शासनाच्या विचाराधिन होती.

#### शासन निर्णय :

प्रस्तावनेत नमूद केलेल्या बाबींचा विचार करून, महाराष्ट्र जिवन प्राधिकरणाने पत्र क्रमांक मजीप्रा/मनीसंसक्ष/नागरी/१३६/२०२१ दि. २२.०३.२०२१ अन्वये दिलेली तांत्रिक मान्यता विचारात घेवून, राज्यातील नागरी स्थानिक स्वराज्य संस्थांमध्ये FSTP प्रकल्पासाठी हायब्रिड कोअर टेक्नॉलॉजीस त्यांनी दिलेल्या परिच्छेद क्र. ३ मधील नमूद अटी व शर्तीच्या आधिन राहून शासन मान्यता देत आहे.

२. हायब्रिड कोअर टेक्नॉलॉजी राबविण्याकरीता महाराष्ट्र जिवन प्राधिकरणाने खालील प्रमाणे किंमत मंजूर केली आहे.

अ.क्र.	हायब्रीड कोअर टेक्नोलॉजी प्रकल्पाची क्षमता (KLD)	प्रकल्पाची किंमत (रुपये)
१	२	३
१	५ KLD	९७,९६,६२३.५९/- (SGST+CGST सह)
२	१० KLD	१,२२,३४,७४६.९४/- (SGST+CGST सह)
३	२० KLD	१,५०,६२,१४०.४९/- (SGST+CGST सह)

(सदर दर हे कोकण विभागाच्या (डी.एस.आर.) म.जी.प्रा दर सूची २०१९-२० व सा.बा.वि. दर सूची २०२०-२१ मध्ये नमदू दरानुसार ठरविण्यात आले आहेत. इतर विभागातील नागरी स्थानिक स्वराज्य संस्थेकरीता स्थानिक स्थिती, म.जी.प्रा दर सूची व सा.बा.वि. दर सूची, प्रमाणे सविस्तर संकल्पने व अंदाजपत्रके तयार करणे आवश्यक आहे.)

हायब्रिड कोअर टेक्नॉलॉजी संदर्भातील तांत्रिक बाबी व डिझाईन जोडपत्र-१ म्हणून या शासन निर्णयातसोबत जोडली आहे.

#### ३. अटी व शर्ती:

१. सदर तंत्रज्ञानाच्या अनुषंगाने बांधण्यात येणाऱ्या FSTP च्या उपांगामधून अपेक्षित मानकाचे BOD/COD मिळण्याबाबतची जबाबदारी संबंधित Technical Provider यंत्रणेची राहिल. सदर तंत्रज्ञान चे Assumed inflow parameter व Effluent parameter यापेक्षा जास्त किंवा कमी

Quality आढळ्यास संबंधित नागरी स्थानिक स्वराज्य संस्थांनी शासनास अवगत करणे आवश्यक राहील.

२. FSTP चे उपांगाची Sizing काही Assumption व Levels घेऊन संकल्पीत करून काढण्यात आले असून त्यामुळे संकल्पित क्षमते करिता उपांगाची Size ह्या कमी पडणार नाही किंवा योग्य असतील याची जबाबदारी संबंधित Technical Provider यंत्रणेची राहील. Units ची संकल्पित Levels प्रमाणे उभारणी आवश्यक आहे.
३. खोदाई बाब प्रत्यक्ष कार्यक्षेत्रावर लागणाऱ्या भुस्तर नुसार घेणे आवश्यक आहे. अंदाजपत्रामध्ये सर्व साधारण सर्व खोदाई बाबींची तरतूद गृहित धरण्यात आली आहे. तथापी, कार्यक्षेत्रावर प्रत्यक्ष जो भुस्तर लागेल त्यानुसार, कार्यवाही करणे आवश्यक राहील. अंदाजपत्रकात दर्शविलेल्या बाबी शिवाई इतर भुस्तर लागल्यास किंवा एखाद्या बाबीचा अंतर्भूत करायची झाल्याची त्याची अंमलबजावणी परस्पर न करता त्याबाबत नगर विकास विभागासोबत संपर्क साधून योग्य तो निर्णय घेणे बंधनकारक आहे. FSTP करीता प्रस्तावित शहर हे Hilly/MMRDA/Municipal etc. प्रमाणे असल्यास त्याप्रमाणे दरसूचीनुसार अंदाजपत्रकाच्या दरात सुधार करणे आवश्यक आहे.
४. प्रस्तावात धरण्यात आलेल्या Sewage pumps ह्या करीता Standby arrangement ची तरतूद करणे आवश्यक आहे. सदर प्रस्तावात नमूद Mechanical Equipment's ह्या नमूद manufacturers कडून घेणे आवश्यक आहे. काही बदल करावयाची झाल्यास संबंधित अधिकाऱ्याची मंजूरी आवश्यक आहे.
५. Biological Digester पासून Lamella Clarifier तसेच Holding sump पासून pressure sand filters पर्यंत pumps प्रस्तावित असून इतर Units मध्ये Gravity Flow प्रस्तावित आहे. सदर inter connection pipe किंवा Channels चे संकल्पन सादर केले नसून त्याची जबाबदारी संबंधित यंत्रणेची राहील.
६. महाराष्ट्र जीवन प्राधिकरण दरसूची मध्ये मटेरीयल लीड घेण्याची तरतूद आहे. मात्र सध्यस्थितीत कोणत्या शहरात किती कि.मी. वर मटेरियल मिळू शकेल याची माहिती या क्षणी उपलब्ध नाही. यास्तव प्रत्येक काम करताना त्याची माहिती प्राप्त करून घेऊन मटेरियलचा लीड दर परिगणना करून त्याचा समावेश करावा. Lead Charges प्रमाणे अंदाजपत्रकातील दरात बदल करणे आवश्यक आहे.
७. सदर प्रस्ताव सध्या मागणी आधारित असल्याने जर काही दिवस FSTP मध्ये Sludge उपलब्ध न झाल्यास FSTP मधील Bio digester मधील liquid level व temperature maintain करावयाची जबाबदारी संबंधित यंत्रणेची राहील.
८. सदर प्रस्तावात सादर केलेले अंदाजपत्रक हे Type Plan व कोकण विभागाच्या दरसूचीमध्ये असून स्थानिक स्थितीप्रमाणे सविस्तर संकल्पने व अंदाजपत्रके तयार करणे आवश्यक आहे.
९. सदर तंत्रज्ञानावर आधारित FSTP कार्यान्वित झाल्यास व भविष्यामध्ये Sewage Treatment Plant उभारण्यात आल्यास तेव्हा त्या प्रस्तावात ह्या चा वापर करण्यात नगरपालिकेस बंधनकारक राहीला. सदर FSTP चा वापर Isolated Areas किंवा ansewered Areas करिता वापर करणे आवश्यक राहील.
१०. सदर अंदाजपत्रक हे Type Estimate असून शहराच्या लोकसंख्येप्रमाणे FSTP ची क्षमता ठरवून त्याप्रमाणे अंदाजपत्रकास trial Pit प्रमाणे Excavation strata व इतर बाबी समावेश करून संकल्पन व अंदाजपत्रकास सक्षम अधिकाऱ्याकडून तांत्रिक मान्यता घेणे बंधनकारक असेल.
११. सदर मंजूरी ही स्वतंत्र योजनेची तांत्रिक मंजूरी म्हणून ग्राह्य धरण्यात येऊ नये.

१२. Royalty व GST बाबतीत ठेकेदाराने अदा केलेल्या रक्कमेच्या आधारे अदायगी करण्याची जबाबदारी संबंधित अंमलबजावणी करण्याच्या यंत्रणेची राहील.

१३. FSTP वापरात येणारी साहित्य व यांत्रिक सामुग्री ही relevant IS प्रमाणे वापरणे आवश्यक आहे. FSTP चा संकलिपित वर्षापर्यंत चालेल त्याप्रमाणे साहित्य वापरणे, तसेच Plant कार्यान्वयात झाल्यानंतर तांत्रिक सहाय्य देण्याची जबाबदारी संबंधित Technical Provider यंत्रणेची राहील.

१४. सदर तंत्रज्ञानाच्या Performance करीता ५ वर्षाचा O & M ची स्वतंत्र तरतूद करणे आवश्यक आहे

१५. FSTP करीता आवश्यक जागा, Approach road, पाणी व विद्युत पुरवठा ही संबंधित स्थानिक स्वराज्य संस्थेची राहील. त्याचप्रमाणे FSTP ची अंमलबजावणी करीता Quality Control, 3rd Party Monitoring सर्व records, logbook of daily treatment units, operation data sheet, testing records ह्या सर्व बाबीची पुर्तता संबंधित स्थानिक स्वराज्य संस्थेची राहील.

१६. सदर FSTP ची Structural Design व Sterility ची जबाबदारी Technical Provider ची राहील. त्याच प्रमाणे Leakages मधून कोणत्या प्रकारचे units मधून कोणत्या प्रकारचे leakages किंवा अन्य बाधा येणार नाही. याची Technical Provider यांनी खबरदारी घेणे आवश्यक आहे.

४. सदर तंत्रज्ञानाची नागरी स्थानिक स्वराज्य संस्थानिहाय अंमलबजावणी व खर्चा संदर्भात सविस्तर सूचना स्वतंत्र आदेशान्वये देण्यात येतील.

५. सदर शासन निर्णय महाराष्ट्र शासनाच्या [www.maharashtra.gov.in](http://www.maharashtra.gov.in) या संकेतस्थळावर उपलब्ध करण्यात आला असून त्याचा सांकेतांक २०२१०४१९१३०७१४४३२५ असा आहे. हा आदेश डिजीटल स्वाक्षरीने साक्षांकित करून काढण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने.

(अजित पालवे)  
कार्यासन अधिकारी, महाराष्ट्र शासन

प्रति :

- १) मा.मुख्यमंत्री यांचे प्रधान सचिव, मंत्रालय, मुंबई
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- १०) प्रादेशिक उप संचालक, नगरपालिका शाखा, विभागीय आयुक्त कार्यालय (सर्व)
- ११) जिल्हा प्रशासन अधिकारी, नगरपालिका शाखा, जिल्हाधिकारी कार्यालय (सर्व)
- १२) मुख्याधिकारी, नगरपरिषदा / नगरपंचायती (सर्व)
- १३) निवडनस्ती, नवि-३४, नगर विकास विभाग, मंत्रालय, मुंबई.

## ESTIMATE FOR 5 KLD FSTP

## MEASUREMENT SHEET

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H& D (M.)	QTY	Unit							
<b>PART 1 FSTP</b>														
<b>(1):- EXCAVATION WORKS</b>														
1	BIO-DIGESTER	1	9.78	3.63	1.65	58.58	M <sup>3</sup>							
2	SLUDGE DRYING BED FOUNDATION	2	2.00	0.60	0.60	1.44	M <sup>3</sup>							
3	MACHINE PLATFORM long span	2	10.37	0.60	0.60	7.47	M <sup>3</sup>							
4	MACHINE PLATFORM short span	2	1.17	0.60	0.60	0.84	M <sup>3</sup>							
5	SCUM REMOVAL CHAMBER	1	4.25	2.46	1.05	10.98	M <sup>3</sup>							
6	SCREENING CHAMBER	1	1.20	2.06	0.60	1.48	M <sup>3</sup>							
7	GRIT CHAMBER/INLET	1	2.66	2.66	0.60	4.25	M <sup>3</sup>							
					<b>Total:-</b>	<b>85.03</b>								
<b>(2):- PLAIN CEMENT CONCRETE WORKS (Grade :-M15)</b>														
1	BIO-DIGESTER PCC	1	9.18	3.03	0.10	2.78	M <sup>3</sup>							
2	SLUDGE DRYING BED BASE PCC	1	7.54	2.00	0.10	1.51	M <sup>3</sup>							
3	BELOW SIDE WALL PCC	2	2.00	0.60	0.10	0.24	M <sup>3</sup>							
4	MACHINE PLAT FROM FOUNDATION WALL PCC long span	2	10.37	0.60	0.10	1.24	M <sup>3</sup>							
5	MACHINE PLAT FROM FOUNDATION WALL PCC short span	2	1.17	0.60	0.10	0.14	M <sup>3</sup>							
6	SCUM REMOVAL CHAMBER	1	3.96	1.86	0.10	0.74	M <sup>3</sup>							
7	SCREENING CHAMBER	1	1.20	1.46	0.10	0.18	M <sup>3</sup>							
8	GRIT CHAMBER/INLET	1	2.06	2.06	0.10	0.42	M <sup>3</sup>							
9	AROUND THE PEVERS BLOCKS OF PAVMENT	1	45.36	0.3	0.10	1.36	M <sup>3</sup>							
10	BASE CONC.IN TRUCK PARKING	1	12.5	4.7	0.10	5.88	M <sup>3</sup>							
					<b>Total:-</b>	<b>14.49</b>								
<b>(3) :- REINFORCEMENT CONCRETE WORKS RAFT (Grade :-M30)</b>														
1	RAFT(30) FOR BIO-DIGESTER	1	8.98	2.83	0.30	7.62	M <sup>3</sup>							
2	RAFT (M30) FRO SC UM REMOVAL CHAMBER	1	3.86	1.66	0.20	1.28	M <sup>3</sup>							
3	RAFT (M30) FOR SCREENING CHAMBER	1	2.10	1.26	0.20	0.53	M <sup>3</sup>							
4	RAFT (M30) GRIT CHAMBER	1	1.86	1.86	0.20	0.69	M <sup>3</sup>							
					<b>Total:-</b>	<b>10.13</b>								
<b>(4) :- REINFORCEMENT CONCRETE WORKS FOR BEAM(Grade :-M30)</b>														
1	SLUDGE DRYING BED SIDE BEAM	2	2.20	0.23	0.23	0.23	M <sup>3</sup>							
2	BEAM PARTITION CENTER WALL	1	8.38	0.23	0.30	0.58	M <sup>3</sup>							
3	FOUNDATION BEAM IN MACHINE PLAT FORM LONG SPAN	2	10.00	0.23	0.30	1.38								
	BEAM IN MACHINE PLAT FORM SHORT SPAN	2	1.54	0.23	0.30	0.21								
					<b>TOTAL</b>	<b>2.40</b>								
<b>(5) :- REINFORCEMENT CONCRETE WORKS FOR COLUMN (Grade :-M30)</b>														
1	COLUMN (M300)	6	0.23	0.23	2.35	0.75	M <sup>3</sup>							
					<b>TOTAL</b>	<b>0.75</b>								
<b>(6) :- REINFORCEMENT CONCRETE WORKS FOR Vertical Wall/SLAB (Grade :-M30)</b>														
1	BIO -DIGESTER LONG SPAN OUTER WALL	2	8.78	0.20	2.35	8.25	M <sup>3</sup>							
2	BIO-DIGESTER SHORT SPAN OUTER WALL	2	2.23	0.20	2.35	2.10	M <sup>3</sup>							
3	BOI-DIGESTER ANOXY CHAMBER PARTITION WALL	1	2.23	0.20	2.35	1.05	M <sup>3</sup>							
4	BIO-DIGESTER SLAB	1	8.78	2.63	0.15	3.46	M <sup>3</sup>							
5	MACHINE PLAT FORM SLAB	1	10.00	2.00	0.15	3.00	M <sup>3</sup>							
					<b>TOTAL</b>	<b>17.86</b>								
<b>(7) :- Providing and fixing in position steel bar reinforcement of various diameters for RCC piles, caps, footings, foundations,slabs, beams, columns, ----etc. complete.(including cost of binding wire) IS 1786, (Bd-F-17/306)</b>														
	TOTAL RCC QTY.=10.13+2.40+0.75+17.86 = 31.14					2.80	MT							
	STEEL -90KG/CUM													
<b>(8) :- BRICKS MESONARY WORKS</b>														
1	BIO-DIGESTER PARTION WALL(BUFFLE)	5	1.00	0.23	1.80	2.07	M <sup>3</sup>							
2	BIO-DIGESTER RETURNING WALL	7	1.00	0.23	2.35	3.78	M <sup>3</sup>							
3	BIO-DIGESTER CENTRE WALL	1	7.00	0.23	1.45	2.33	M <sup>3</sup>							
4	MACHINE PLAT FORM FOUNDATION WALL long span	2	10.00	0.23	0.20	0.92	M <sup>3</sup>							
5	MACHINE PLAT FORM FOUNDATION WALL short span	2	1.54	0.23	0.20	0.14	M <sup>3</sup>							
6	MACHINE PLATFORM ABOVE GROUND LEVEL LONG WALL	2	10.00	0.23	1.12	5.15	M <sup>3</sup>							
7	MACHINE PLATFORM ABOVE GROUND LEVEL SHORT WALL	2	1.54	0.23	1.12	0.79	M <sup>3</sup>							

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H & D (M.)	Unit
						QTY
8	SLUDGE DRYING SHORT SPAN WALL	2	2.00	0.23	1.25	1.15 M <sup>3</sup>
9	SCUM REMOVAL CHAMBER LONG SPAN WALL	2	3.75	0.23	2.00	3.45 M <sup>3</sup>
10	SCUM REMOVAL SHORT SPAN WALL	2	1.00	0.23	2.00	0.92 M <sup>3</sup>
11	SCREENING CHAMBER LONG SPAN WALL	2	2.27	0.23	1.45	1.51 M <sup>3</sup>
12	GRIT CHAMBER LONG SPAN WALL	2	1.66	0.23	1.45	1.11 M <sup>3</sup>
13	GRIT CHAMBER SHORT SPAN WALL	1	1.20	0.23	1.45	0.40 M <sup>3</sup>
14	GRIT CHAMBER SHORT SPAN WALL	1	0.60	0.23	1.45	0.20 M <sup>3</sup>
					<b>Total:-</b>	<b>23.94</b>

**(9) :- Hard Couse/ MOORUM Filling Work**

1	Sludge Drying Bed Hard course Filling (Moorum)	1	7.54	2.00	0.65	9.83 M <sup>3</sup>
2	Hard course Filling Machine PlatForm Foundation	1	9.54	1.60	1.10	16.79 M <sup>3</sup>
					<b>Total:-</b>	<b>26.62</b>

**(10) :- Media Filter FOR SLUDGE DRYING BED**

1	2 to 12 mm mix greval filter media	1	7.54	2.00	0.20	3.02 M <sup>3</sup>
					<b>Total:-</b>	<b>3.02</b>

**(11) :- Pevers Block Work**

1	Pevers Blocks for sludge drying bed	1	7.54	2.00		15.08 M <sup>2</sup>
2	Pevers Blocks In front of Plant Long span	1	11.87	1		11.87 M <sup>2</sup>
3	Pevers Blocks In Left side of Plant short span	1	6.58	1		6.58 M <sup>2</sup>
4	Pevers Blocks In back side of Plant Long span	1	13.53	1		13.53 M <sup>2</sup>
5	Pevers Blocks in side of screen & Scum chamber	1	2.71	2.3		6.23 M <sup>2</sup>
		1	2.86	0.83		2.37
		1	1.18	0.76		0.90
6	Pevers Blocks in side of screen & Scum chamber	1	1.97	1		1.97 M <sup>2</sup>
					<b>Total:-</b>	<b>58.53</b>

**(12) :- PLASTRING IN BIO DIGESTER**

1	Both side plastering in Bio-Digester chamber	10	1.00	1.80		18.00 M <sup>2</sup>
2	Both side plastering in Bio-Digester chamber	22	1.00	2.30		50.60 M <sup>2</sup>
3	Center wall plastering in Bio-Digester chamber	2	7.00	1.75		24.50 M <sup>2</sup>
4	Bio digester outer long wall plastering	2	11.80	2.30		54.28 M <sup>2</sup>
5	plaster in scume removal outer	1	3.75	2.00		7.50 M <sup>2</sup>
		1	2.69	2.00		5.38 M <sup>2</sup>
		1	1.46	2.00		2.92 M <sup>2</sup>
6	plaster in scume removal inner	2	3.30	2.00		13.20 M <sup>2</sup>
		4	1.00	2.00		8.00 M <sup>2</sup>
7	screening outer	2	2.20	1.55		6.82 M <sup>2</sup>
	screening inner	2	2.43	1.55		7.53 M <sup>2</sup>
8	gritt chamber outer	3	1.66	1.55		7.72 M <sup>2</sup>
		1	0.60	1.55		0.93 M <sup>2</sup>
	gritt chamber inner	3	1.20	0.90		3.24 M <sup>2</sup>
		1	0.60	0.90		0.54 M <sup>2</sup>
					<b>Total:-</b>	<b>211.16 M<sup>2</sup></b>

**PART 2) GAURD ROOM ,TOILET, BOUNDARY WALL**

**(1) :- Excavation For Guard Room Foundation/Pilling**

1	footing Excavation	6	1.50	1.50	1.00	13.50 M <sup>3</sup>
2	Excavation GUARD RM wall foundation long wall	2	2.80	0.60	0.60	2.02 M <sup>3</sup>
	Excavation GUARD RM wall foundation short wall	2	1.80	0.60	0.60	1.30 M <sup>3</sup>
	Excavation TOL. wall foundation wall	1	0.80	0.60	0.60	0.29 M <sup>3</sup>
3	Excavation for column footing (C1 type)	2	1.50	1.50	1.00	4.50 M <sup>3</sup>
4	Excavation for column footing (C2 type)	23	1.20	1.20	1.00	33.12 M <sup>3</sup>
5	Excavation below boundry wall	1	30.96	0.60	0.60	11.15 M <sup>3</sup>
					<b>Total:-</b>	<b>65.87 M<sup>3</sup></b>

**(2):- PLAIN CEMENT CONCRETE WORKS (Grade :-M15)**

1	Column for guard rm& toilet	6	1.50	1.50	0.10	1.35 M <sup>3</sup>
2	Brick wall foundation PCC	1	20.00	0.40	0.10	0.80 M <sup>3</sup>
3	Gard Room Flooring PCC	1	3.00	4.00	0.05	0.60 M <sup>3</sup>
4	Toilet Flooring PCC	1	2.10	1.20	0.05	0.13 M <sup>3</sup>
5	Urine Pot Flooring PCC	1	1.70	0.70	0.05	0.06 M <sup>3</sup>
6	PCC for boundary wall column footing (C1 type)	2	1.50	1.50	0.10	0.45 M <sup>3</sup>

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H & D (M.)	QTY	Unit
7	PCC for boundary wall column footing (C2 type)	23	1.20	1.20	0.10	3.31	M <sup>3</sup>
8	PCC below boundry wall	1	30.96	0.60	0.10	1.86	M <sup>3</sup>
					Total:-	8.56	
<b>(3) Footing</b>							
1	column footing raft for GUARD RM& TOI. (M20)	6	1.20	1.20	0.25	2.16	M <sup>3</sup>
2	RAFT for boundary wall column footing (C1 type)	2	1.20	1.20	0.25	0.72	M <sup>3</sup>
3	RAFT for boundary wall column footing (C2 type)	23	1.00	1.00	0.25	5.75	M <sup>3</sup>
					Total:-	8.63	M <sup>3</sup>
<b>(4) Column</b>							
1	GUARD RM& TOI. Column (M20)	6	0.23	0.23	4.25	1.35	M <sup>3</sup>
2	boundary wall column(C1 type)	2	0.40	0.40	2.15	0.69	M <sup>3</sup>
3	boundary wall column (C2 type)	23	0.23	0.23	2.15	2.62	M <sup>3</sup>
					Total:-	4.65	M <sup>3</sup>
<b>(5) Beam &amp; lintal beam (M20)</b>							
1	Slab beam long span	2	4.46	0.23	0.20	0.41	M <sup>3</sup>
2	Slab beam short span	2	3.00	0.23	0.20	0.28	M <sup>3</sup>
3	Toilet Slab Beam Long span slab beam	1	2.60	0.23	0.30	0.18	M <sup>3</sup>
4	Toilet Slab Beam Short span slab beam	2	1.20	0.23	0.30	0.17	M <sup>3</sup>
5	Plinth Beam long span	2	4.00	0.23	0.30	0.55	M <sup>3</sup>
6	Plinth Beam short span	2	3.00	0.23	0.30	0.41	M <sup>3</sup>
7	Lintel beam above door	2	3.60	0.23	0.23	0.38	M <sup>3</sup>
8	Lintel beam above window	2	1.50	0.23	0.23	0.16	M <sup>3</sup>
9	Toilet Long span plinth beam	1	2.60	0.23	0.30	0.18	M <sup>3</sup>
10	Toilet Short span plinth beam	2	1.20	0.23	0.30	0.17	M <sup>3</sup>
11	BOUNDARY WALL PLINTH BEAM	1	61.60	0.23	0.23	3.26	M <sup>3</sup>
					Total:-	6.14	M <sup>3</sup>
<b>(6) RCC WALL &amp;SLAB (M20)</b>							
1	Guard room	1	4.66	3.66	0.13	2.13	M <sup>3</sup>
2	Toilet Short span wall	1	2.66	1.45	0.13	0.48	M <sup>3</sup>
					Total:-	2.61	M <sup>3</sup>
<b>(7) :-</b> Providing and fixing in position steel bar reinforcement of various diameters for RCC piles, caps, footings, foundations,slabs, beams, columns, ----etc. complete.(including cost of binding wire) IS 1786, (Bd-F-17/306)							
	TOTAL RCC QTY.=	22.04					
	STEEL -90KG/CUM					1.98	MT
<b>(8) :- BRICKS MESONARY WORKS</b>							
1	guard room long wall	2	4.00	0.23	3.30	6.07	M <sup>3</sup>
2	guard room long wall	2	3.00	0.23	3.30	4.55	M <sup>3</sup>
3	Toilet long wall	1	2.56	0.23	3.30	1.94	M <sup>3</sup>
4	Toilet Short wall	1	1.05	0.23	3.30	0.80	M <sup>3</sup>
5	BOUNDARY WALL	1	63.89	0.23	1.67	24.54	M <sup>3</sup>
					Total:-	37.91	M <sup>3</sup>
<b>(9) :- PLASTERING WORKS</b>							
	Plastring long wall (Inner)	2	4.00		3.00	24.00	M <sup>2</sup>
	Plastring short wall (Inner)	2	3.00		3.00	18.00	M <sup>2</sup>
	Plastring Ceiling	1	4.00	3.00		12.00	M <sup>2</sup>
	Plastring long wall (Outer)	2	4.46		3.73	33.23	M <sup>2</sup>
	Plastring short wall (Outer)	2	3.46		3.73	25.78	M <sup>2</sup>
	Plastring toilet (Inner)	2	2.10		3.00	12.60	M <sup>2</sup>
	Plastring toilet (Inner)	2	1.05		3.00	6.30	M <sup>2</sup>
	Plastring toilet CEILING (Inner)	1	2.10	1.05		2.21	M <sup>2</sup>
	Plastring long wall (Outer)	1	2.56		3.73	9.55	M <sup>2</sup>
	Plastring short wall (Outer)	1	1.45		3.73	5.41	M <sup>2</sup>
	Plastring boundry wall at Inner side	1	70.43		1.67	117.62	M <sup>2</sup>
	Plastring boundry wall at outer side	1	71.58		1.67	119.54	M <sup>2</sup>

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H& D (M.)			Unit
						QTY	Total:-	
							386.22	M <sup>2</sup>
10)	<b>Painting/Colouring Work for Guard Room</b>							
	As per item no.9						386.22	M <sup>2</sup>
11)	<b>Guard Room Door</b>	1	1.07			1.83	1.95	M <sup>2</sup>
	Toilet Door	1	0.76			1.83	1.39	M <sup>2</sup>
							<b>Total:-</b>	<b>3.34</b>
12)	Window	2	0.90			0.90	1.62	M <sup>2</sup>
13)	VENTILATOR	2	0.45			0.45	0.41	M <sup>2</sup>
14)	<b>Guard Room Plinth filling</b>	1.00	4.00		3.00	0.60	7.20	M <sup>3</sup>
	Toilet Plinth filling	1.00	2.10		1.05	0.60	1.32	M <sup>3</sup>
							<b>Total:-</b>	<b>8.52</b>
	OTHERS							
1)	<b>MS gate</b>							
	Main Gate	2	2.50				2.00	no
	WICKET Gate	1	1.00				1.00	no.
2)	W.C. PAN	1	Nos					
3)	Wash Basin	1	Nos					
4)	Urin Pot	2	Nos					
5)	UPVC PIPE 4" dia	6	mt					
6)	Electric Fan	1	Nos					
7)	LED BULB 100 WATT	4	Nos					
8)	Bulb Holders	4	Nos					
9)	Electric wire	20	MT					
10)	PVC pipe for electric fitting	10	MT					
11)	Power switch Board	2	Nos					

DESIGN OF KLD CAPACITY FSTP			
Category	Parameter	Value	Unit
Values adopted from CPHEEO manual on sewage treatment plant November 2013 Chapter 9 table 9.13 page 9-43			
Parameter	Value	Parameter	Value
Quantitative Sludge	5	Practical Sludge	KLD
Colour	5	Unobjectionable	M3/dm <sup>3</sup>
Odour	Smell like H <sub>2</sub> S	Unobjectionable	
Temperature	18°C-27°C	-	
pH	5.5-9.0		
total Solid	40000 0	≤100	Mg/L
total dissolved solid	25000 0		Mg/L
Suspended Solid	15000 0	≤100	Mg/L
Volatile Solide	10000 0		Mg/L
Total BOD <sub>2</sub> 20°C	100	≤10	Mg/L
COD	2000	≤50	Mg/L
Oil & Grease	6000	≤10	Mg/L
Total Nitrogen TKN	700	-	Mg/L
N-NH <sub>3</sub>	150 00	-	Mg/L
Org-N	550 00	-	Mg/L
N-NO <sub>2</sub>	-	-	Mg/L
Total P	250	-	Mg/L
Alkalinity		-	Mg/L
total Coliform	100000	≤1000	Mpn/100 MI
Minimum values have been adopted between discharge standard into inland surface water and that for land for irrigation			
TREATED SEWAGE QUALITY			
Aerator CPC INGT			
BOD 20°C	≤10	Mg/L	
Total Suspended Solid	≤100	Mg/L	
COD	≤50	Mg/L	
al	≤10	Mg/L	
Cd	≤5	Mg/L	
Cr	≤50	Mg/L	
Cu	≤300	Mg/L	
Pb	≤100	Mg/L	
Hg	≤0.15	Mg/L	
Ni	≤50	Mg/L	
Sn	≤1000	Mg/L	
C/N Ratio	20:40		
total Coliform	1000	MPN/100MI	
Quantity of Sewage Generated	5000.00	Lpd	
	5.00	KLD	
	5.00	Cum/dm <sup>3</sup>	
RAW SEWAGE CHARACTERISTICS			
Average Sewage flow entering the treatment plant	5000.00	lpd	
Assumed Peak Factor	1.00		DEWATS
Peak Sewage flow entering the treatment plant	5000.00	lpd	
COD	25000.00	mg/Lt	
BOD	6500.00	mg/Lt	
TDS	15200.00	mg/Lt	
TSS	15000.00	mg/Lt	
pH	4.5 to 11.5		
INLET CHAMBER GRIT CHAMBER			
Number of unit	1	no	number of unit
total Collection time (eeding hour)	8	hour	
Quantity of Flow Ave	3000 l/s per hour	be	Collection barge pool vehicle
Assumed Detention period	0.05	Cum/minute	
Volume of the Inlet Chamber	14.00	minute	
Assumed Depth of	0.70	Cum	
Assumed Depth of	0.50	m	

DESIGN OF KLD CAPACIT FSTP			
C 00000 A 0000 F 000	0	KLD	
Area Required for Inlet Chamber	1.40	S m	
Assumed Length to Breadth Ratio	1.00		
Breadth of the Tank	1.20	m	
length of the Tank	1.20	m	
Product of Design Coefficients for GRIT CHANNEL 0.2 x 0.2 x 0.00 SWD			
<b>2 Screen Conditions</b>			
Peak Design Flow	0.000	C m	
Assume Clear Spacing between bars	10.00	mm	20-50mm, pg.201 of CPHEEO Manual
Velocity ahead of screen V	0.40	m/s	pg. 202 of CPHEEO Manual
Area of Screen Channel, A m/Va	0.00	m <sup>2</sup>	
Width d	0.15		
Keeping Side Water Depth	0.25	m	
<b>OVER ALL Width of screen W</b>	<b>0.00</b>	m	
Width d	0.00	m	
Water depth upstream, m A/W	0.25	m	
diameter of bar	0.006	m	
Number of opening in chamber, W X.o + (X - 1) here , X No. of Opening to Clear Space between bars This is the total	0.00	no	
Width d	38.00	no	
Total effective width of opening, W	0.372	m	
Assume Angle of inclination	60.00	Degree	
Assumed Detention Period in the Screen channel	5.00	s	
Assume Length of the Screen chamber	2.00	m	
Width d	0.00	m	
Inclined height of the screen, m	0.29	m	
Velocity through the screen, V m/H1W	0.00	m/s	
Head loss thru screen in normal condition, $h_1 = 0.0729 V^2 - Va^2$	-0.01	m	less than 0.15 m hence 0
Head loss on 50% clogging $h_1 = 0.0729.2V^2 - Va^2$	-0.01	m	less than 0.3 m hence 0
Water Depth downstream Hb, $Ha - b + Va^2/2g - V^2/2g + Ha - Headloss$ thru screen in normal condition	0.27	m	
Water Depth downstream Hb, $Ha - b + Va^2/2g - V^2/2g + Ha - Headloss$ thru screen in clogged condition	0.27	m	
<b>Product of Design Coefficients for Screen 0.00 M 0.00 M 0.00 M SWD 0.20 M Product</b>			
Concentration of screen load			
OD	00.00	mg/Lt	
CD	25000.00	mg/Lt	
<b>Material properties</b>			
No. of tanks	1		Concentration of solid load
Computation of Settling Velocity Sto La			Concentration of solid load
Kinematic Viscosity of Effluent assumed	0.0000011	m/s	
Particle Diameter assumed	0.000150	m	





DESIGN OF KLD CAPACIT FSTP			
Carrier Area F		KLD	
Design Carrier Fill	40		
Carrier Void Space	60		
BOD Dail Loading	0	g/da	
	0	g/da	
Carrier Surface Area needed	46.8	m <sup>2</sup>	
Calculated Carrier Volume	0.118	m <sup>3</sup>	
Liquid Depth in Tank	2.2	m	
Calculated Tank Width	1.0	m	
Calculated Tank Length	2.1	m	
Calculated Tank Volume	4.6	m <sup>3</sup>	
<b>Stand Stand C</b>			
BOD Dail Loading	0	g/da	
	0	g/da	
Liquid Depth in Tank	2.2	m	
Calculated Tank Width	1	m	
Calculated Tank Length	1.5	m	
Calculated Tank Volume	0	m <sup>3</sup>	
<b>OD AND COD REDUCTION AFTER AREA 1 AND AREA 2</b>			
OD Reduction	0		
COD Reduction	0		
OD Reduction after area 1	0	mg/Lt	
COD Reduction after area 1	135.00	mg/Lt	
Area 1 Area 2 22 L W 0 rd			
OD Reduction after area 2	0		
COD Reduction after area 2	0		
OD Reduction after area 2	0.02	mg/Lt	
COD Reduction after area 2	27.00	mg/Lt	
<b>Process Flow Diagram</b>			
Inflow to area 1	20	dm <sup>3</sup>	
OD 20 dm <sup>3</sup> to area 1	0	mg/L	
OD 20 dm <sup>3</sup> to area 2	0	mg/L	
<b>IV. Control Parameters</b>			
O <sub>2</sub> needed per g BOD	2.00	g O <sub>2</sub> /g BOD	
SOTE a Function of Depth	2.50	per m depth	
AOTE/SOTE	0.5		
Pressure Drop across Filter	0.030	bar	
From manufacturer			
Depth of Filter	2.0	m	
Standard Temperature	25	°C	
Standard Pressure	1.014	bar	
Atmospheric Pressure	1.014	bar	
Air Density at STP	1.200	g/m <sup>3</sup>	
O <sub>2</sub> Content in Air	0.2770	g/m <sup>3</sup>	
<b>8</b>			
Process 2 area 2 00 W S			
<b>A</b>			
Incoming BOD of Raw sewage	175.00	mg/L	
BOD to be reduced	35	mg/L	
BOD Load	0.9	g/da	
Oxygen required to remove BOD load	2	g/g of BOD	
Oxygen required	1.8	g/da	
	0.22	g/hr	



DESIGN □ F □ KLD CAPACIT □ FSTP			
C □ A □ r □ F □	□	KLD	
C □ D R □ □□□	□□00	□	
□□D R □ □□□□□rd □□□ d□□□□r	□□□□	mg/Lt	
C □ D R □ □□□□□rd □□□ d□□□□r	22.95	mg/Lt	
□□F □□r □□d P □□□			
Pr□□d F □□r □□d □□□□□□□□□□	0 □□	C □□ □□r	
	□□00	□□d	
15 D □□□□□□□□r □□□□□□ IN LINE			
□□D R □ □□□	20.00	□	
C □ D R □ □□□	20.00	□	
□□D R □ □□□□□rd □□□□□□□	□□□□□	mg/Lt	
C □ D R □ □□□□□rd □□□□□□□	18.36	mg/Lt	
16 TREATED WATER TANK			
totalL □ Quantit □ o □ e □ luent	5	CUM	
TOTAL LOSS IN PROCESS	15.0	□	
TOTAL TREATED WATER	4.25	CUM	
Pea□ De□ign Flo□	4.25	Cum/da□	

DESIGN OF KLD CAPACIT FSTP			
C 00000 A 0000 F 000	0	KLD	
Assumed Detention period	2	hour	
Volume of the Tan	1.0625	Cum	
Assumed Depth of liquid column	1.8	m	
Area required for the tan	0.590277778	Sqm	
No. of Tan Proposed	1		
area required for each tan	0.590277778	Sqm	
Length to Breadth ratio	1		
Breadth of the tan	1	m	
Length of the tan	1	m	

DEPARTMENT: MJP  
PROJECT: 5 KLD FSTP  
NOTE:  
1. ALL DIMENSIONS & LEVEL ARE IN MILLIMETERS  
2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.  
3. ANY DISCREPANCY IN THIS DRAWING SHALL BE BROUGHT TO BE IN NOTICE OF CONSULTANT.

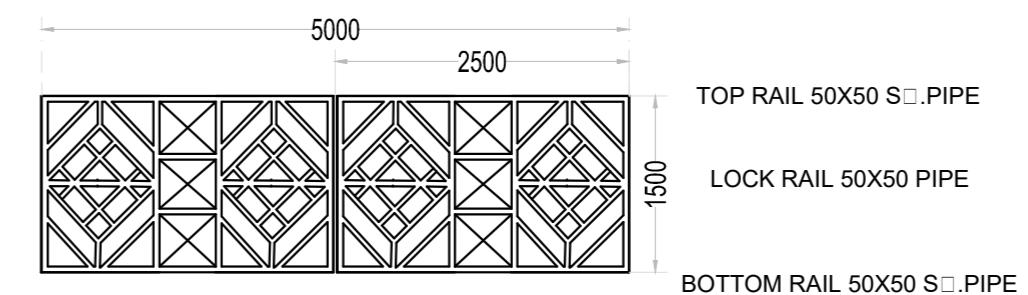
AREA STATEMENT  
TOTAL AREA 25 Mt. X 13.6 Mt.  
AREA OF PLANT 15.5 Mt. X 7.6 Mt.  
BOUNDARY WALL 61.6 Rmt.  
MAIN GATE 5.0 Rmt.  
WICKET GATE 1.0 Rmt.  
OPERATOR ROOM 4.0 Mt. X 3.0 Mt.  
  
(67.6-5.29)-6 MT GATE = 56.3 MT.

INDEX  
REINFORCED CEMENT CON.  
PLAIN CEMENT CONCRETE  
BRICK MASONRY.

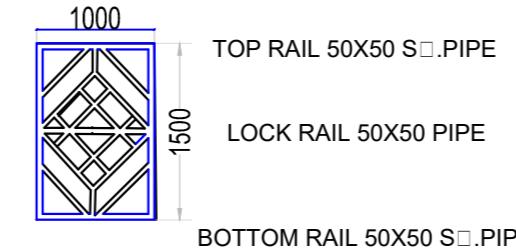
DRAWING TITLE:  
KLD FSTP NDAR WALL CIVIL GA DRAWING

DRAWING NO.: DDB/PRO/GA-01 SHEET NO.: 01A/03  
DATE: 19.02.2021 SCALE: 1:100

CONTRACTOR



MAIN GATE



WICKET GATE

TOP COPING 230X100

BEAM 230X230

GL

1000

650

230

100

1200

100

1000

1500

100

1000

1170

500

600

600

GL

GL

1000

1500

1000

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DEPARTMENT:  
MJP

## PROJECT: 5 KLD FSTP

NOTE:  
1.ALL DIMENSIONS & LEVEL ARE IN MILLIMETERS  
2.ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.  
3.ANY DISCREPANCY IN THIS DRAWING SHALL BE BROUGHT TO BE IN NOTICE OF CONSULTANT.

## AREA STATEMENT

TOTAL AREA 25 Mt.X13.6 Mt.

AREA OF PLANT 15.5 Mt.X7.6 Mt.

BOUNDARY WALL 71.5 Rmt.

MAIN GATE      4.5 RMt.

WICKET GATE 12 RMt

## INDEX

## REINFORCED CEMENT CON.

## PLAIN CEMENT CONCRETE

 BRICK MASONARY.

DRAWING TITLE:  
**0 KLD FSTP GA RD  
ROM TICIVIL GA  
DRAWING**

DRAWING NO.: SHEET NO.:

DDB/PBO/GA-01

01A/02

DATE: SCALE:

4466

1:100

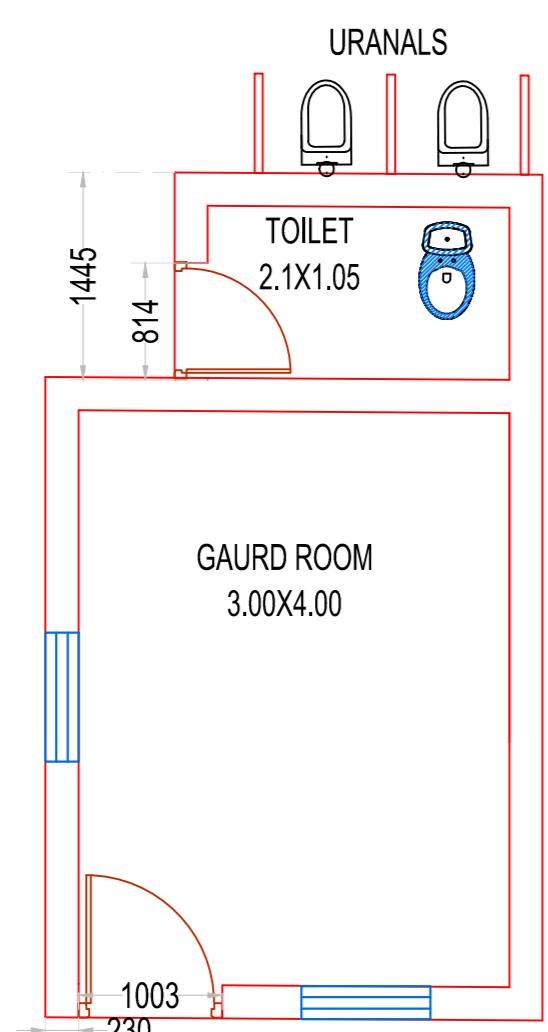
19.02.2021

Architectural floor plan of a building section. The plan shows a main rectangular room with a width of 1000 and a depth of 600. To the right is a vertical corridor with a total depth of 2700, divided into a 300 section and a 2400 section. A T-shaped extension extends from the bottom of the corridor. The bottom of the plan shows a foundation with a width of 1500 and a thickness of 300. A horizontal arrow labeled 'GL' indicates the ground level.

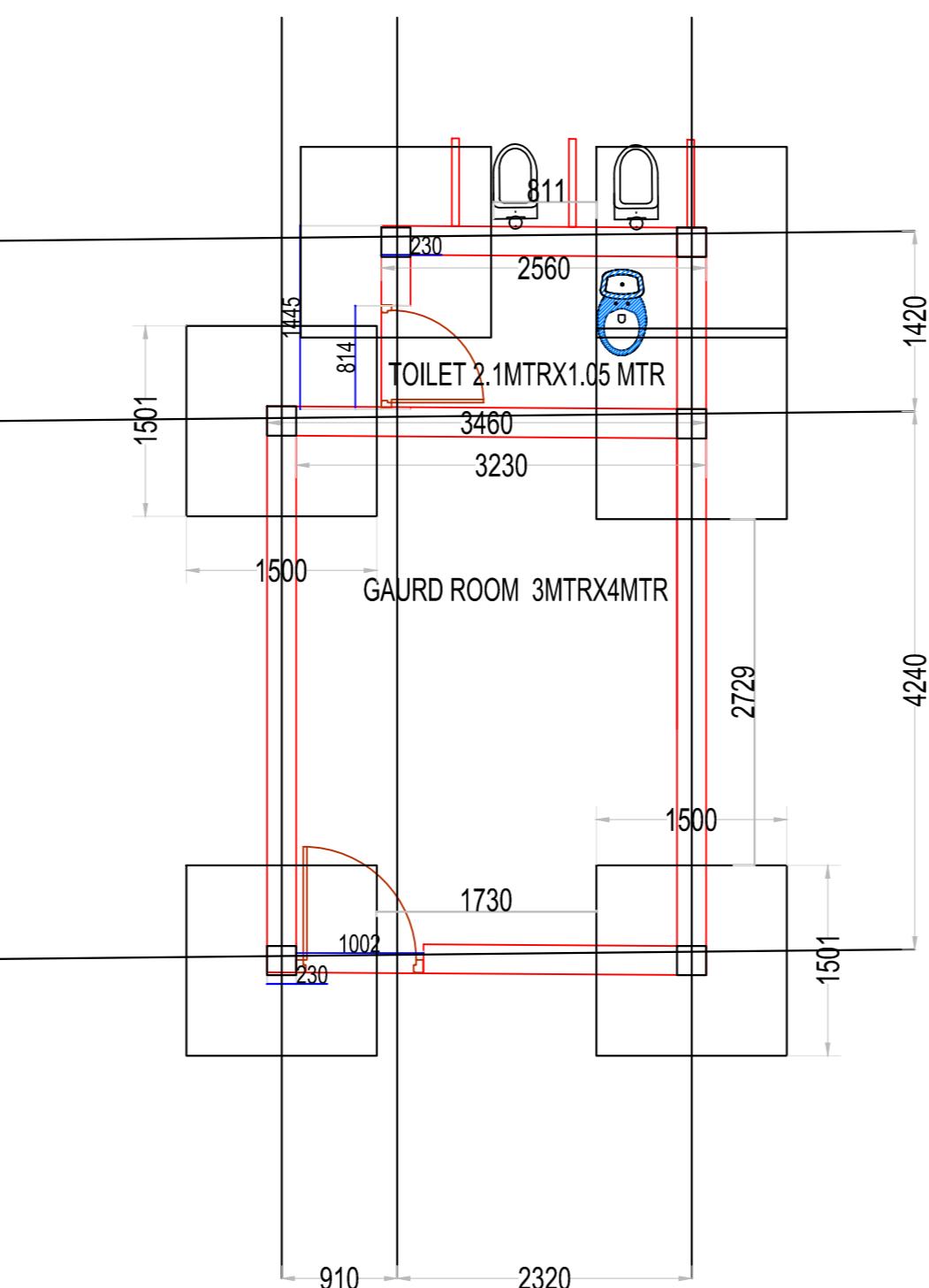
## DETAIL OF CLOUMN

The diagram shows a room with a height of 2700. The room has two 'GL' labels at the bottom. The height is indicated by a vertical dimension line on the left side.

## SECTION OF GAUARD ROOM



## PLAN OF GUARD ROOM&TOILET



# CENTRE LINE PLAN OF GAUARD

## ROOM&TOILET





# ESTIMATE FOR 10 KLD FSTP

## MEASUREMENT SHEET

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H & D (M.)	Unit	
						QTY	

### PART 1 FSTP

#### (1):- EXCAVATION WORKS

1	BIO-DIGESTER	1	12.75	4.63	1.85	109.21	M <sup>3</sup>
2	SLUDGE DRYING BED FOUNDATION	2	2.00	0.60	0.60	1.44	M <sup>3</sup>
3	MACHINE PLATFORM long span	2	10.37	0.60	0.60	7.47	M <sup>3</sup>
4	MACHINE PLATFORM short span	2	1.17	0.60	0.60	0.84	M <sup>3</sup>
5	SCUM REMOVAL CHAMBER	1	4.25	2.46	1.05	10.98	M <sup>3</sup>
6	SCREENING CHAMBER	1	1.20	2.06	0.60	1.48	M <sup>3</sup>
7	GRIT CHAMBER/INLET	1	2.66	2.66	0.60	4.25	M <sup>3</sup>
						<b>Total:-</b>	<b>135.67</b>

#### (2):- PLAIN CEMENT CONCRETE WORKS (Grade :-M15)

1	BIO-DIGESTER PCC	1	12.20	4.03	0.10	4.92	M <sup>3</sup>
2	SLUDGE DRYING BED BASE PCC	1	7.54	2.00	0.10	1.51	M <sup>3</sup>
3	BELOW SIDE WALL PCC	2	2.00	0.60	0.10	0.24	M <sup>3</sup>
4	MACHINE PLAT FROM FOUNDATION WALL PCC long span	2	10.37	0.60	0.10	1.24	M <sup>3</sup>
5	MACHINE PLAT FROM FOUNDATION WALL PCC short span	2	1.17	0.60	0.10	0.14	M <sup>3</sup>
6	SCUM REMOVAL CHAMBER	1	3.96	1.86	0.10	0.74	M <sup>3</sup>
7	SCREENING CHAMBER	1	1.20	1.46	0.10	0.18	M <sup>3</sup>
8	GRIT CHAMBER/INLET	1	2.06	2.06	0.10	0.42	M <sup>3</sup>
9	AROUND THE PEVERS BLOCKS OF PAVMENT	1	45.356	0.3	0.10	1.36	M <sup>3</sup>
10	BASE CONC.IN TRUCK PARKING	1	13.1	4.66	0.10	6.10	M <sup>3</sup>
						<b>Total:-</b>	<b>16.85</b>

#### (3) :- REINFORCEMENT CONCRETE WORKS RAFT (Grade :-M30)

1	RAFT(30) FOR BIO-DIGESTER	1	11.98	3.83	0.30	13.77	M <sup>3</sup>
2	RAFT (M30) FRO SC UM REMOVAL CHAMBER	1	3.86	1.66	0.20	1.28	M <sup>3</sup>
3	RAFT (M30) FOR SCREENING CHAMBER	1	2.10	1.26	0.20	0.53	M <sup>3</sup>
4	RAFT (M30) GRIT CHAMBER	1	1.86	1.86	0.20	0.69	M <sup>3</sup>
						<b>Total:-</b>	<b>16.27</b>

#### (4) :- REINFORCEMENT CONCRETE WORKS FOR BEAM(Grade :-M30)

1	SLUDGE DRYING BED SIDE BEAM	2	2.20	0.23	0.23	0.23	M <sup>3</sup>
2	BEAM PARTITION CENTER WALL	1	10.30	0.23	0.30	0.71	M <sup>3</sup>
3	FOUNDATION BEAM IN MACHINE PLAT FORM LONG SPAN	2	10.00	0.23	0.30	1.38	
	BEAM IN MACHINE PLAT FORM SHORT SPAN	2	1.54	0.23	0.30	0.21	
						<b>TOTAL</b>	<b>2.54</b>

#### (5) :- REINFORCEMENT CONCRETE WORKS FOR COLUMN (Grade :-M30)

1	COLUMN (M300)	6	0.23	0.23	2.30	0.73	M <sup>3</sup>
						<b>TOTAL</b>	<b>0.73</b>

#### (6) :- REINFORCEMENT CONCRETE WORKS FOR Vertical Wall/SLAB (Grade :-M30)

1	BIO -DIGESTER LONG SPAN OUTER WALL	2	11.77	0.20	2.30	10.83	M <sup>3</sup>
2	BIO-DIGESTER SHORT SPAN OUTER WALL	2	3.23	0.20	2.30	2.97	M <sup>3</sup>
3	BIO-DIGESTER ANOXY CHAMBER PARTITION WALL	1	3.23	0.23	2.30	1.71	M <sup>3</sup>
4	BIO-DIGESTER SLAB	1	11.80	3.63	0.15	6.43	M <sup>3</sup>
5	MACHINE PLAT FORM SLAB	1	10.00	2.00	0.15	3.00	M <sup>3</sup>
						<b>TOTAL</b>	<b>24.93</b>

(7) :- Providing and fixing in position steel bar reinforcement of various diameters for RCC piles, caps, footings, foundations,slabs, beams, columns, ----etc. complete.(including cost of binding wire) IS 1786, (Bd-F-17/306)

TOTAL RCC QTY.=16.27+2.54+0.73+24.93 = 44.47						4.00	MT
STEEL -90KG/CUM							

#### (8) :- BRICKS MESONARY WORKS

1	BIO-DIGESTER PARTION WALL(BUFFLE)	5	1.50	0.23	2.00	3.45	M <sup>3</sup>
2	BIO-DIGESTER RETURNING WALL	7	1.50	0.23	2.55	6.16	M <sup>3</sup>
3	BIO-DIGESTER CENTRE WALL	1	10.00	0.23	1.65	3.80	M <sup>3</sup>
4	MACHINE PLAT FORM FOUNDATION WALL long span	2	10.00	0.23	0.20	0.92	M <sup>3</sup>
5	MACHINE PLAT FORM FOUNDATION WALL short span	2	1.54	0.23	0.20	0.14	M <sup>3</sup>
6	MACHINE PLATFORM ABOVE GROUND LEVEL LONG WALL	2	10.00	0.23	1.12	5.15	M <sup>3</sup>
7	MACHINE PLATFORM ABOVE GROUND LEVEL SHORT WALL	2	1.54	0.23	1.12	0.79	M <sup>3</sup>

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H& D (M.)	QTY	Unit
8	SLUDGE DRYING SHORT SPAN WALL	2	2.00	0.23	1.25	1.15	M <sup>3</sup>
9	SCUM REMOVAL CHAMBER LONG SPAN WALL	2	3.75	0.23	2.00	3.45	M <sup>3</sup>
10	SCUM REMOVAL SHORT SPAN WALL	2	1.00	0.23	2.00	0.92	M <sup>3</sup>
11	SCREENING CHAMBER LONG SPAN WALL	2	2.27	0.23	1.45	1.51	M <sup>3</sup>
12	GRIT CHAMBER LONG SPAN WALL	2	1.66	0.23	1.45	1.11	M <sup>3</sup>
13	GRIT CHAMBER SHORT SPAN WALL	1	1.20	0.23	1.45	0.40	M <sup>3</sup>
14	GRIT CHAMBER SHORT SPAN WALL	1	0.60	0.23	1.45	0.20	M <sup>3</sup>
						<b>Total:-</b>	<b>29.15</b>

**(9) :- Hard Couse/ MOORUM Filling Work**

1	Sludge Drying Bed Hard course Filling (Moorum)	1	7.54	2.00	0.65	9.83	M <sup>3</sup>
2	Hard course Filling Machine PlatForm Foundation	1	9.54	1.60	1.10	16.79	M <sup>3</sup>
						<b>Total:-</b>	<b>26.62</b>

**(10) :- Media Filter FOR SLUDGE DRYING BED**

1	2 to 12 mm mix greval filter media	1	7.54	2.00	0.20	3.02	M <sup>3</sup>
						<b>Total:-</b>	<b>3.02</b>

**(11) :- Pevers Block Work**

1	Pevers Blocks for sludge drying bed	1	7.54	2.00		15.08	M <sup>2</sup>
2	Pevers Blocks In fron of Plant Long span	1	16.5	1		16.50	M <sup>2</sup>
3	Pevers Blocks In Left side of Plant Long span	1	7.62	1		7.62	M <sup>2</sup>
4	Pevers Blocks In back side of Plant Long span	1	14.8	1		14.80	M <sup>2</sup>
5	Pevers Blocks in side of screen & Scum chamber	1	4	5.8		23.20	M <sup>2</sup>
6	Pevers Blocks in side of screen & Scum chamber	1	2.2	2.7		5.94	M <sup>2</sup>
						<b>Total:-</b>	<b>83.14</b>

**(12) :- PLASTRING IN BIO DIGESTER**

1	Both side plastering in Bio-Digester chamber	10	1.50	2.00		30.00	M <sup>2</sup>
2	Both side plastering in Bio-Digester chamber	22	1.50	2.30		75.90	M <sup>2</sup>
3	Center wall plastering in Bio-Digester chamber	2	10.30	2.30		47.38	M <sup>2</sup>
4	Bio digester outer long wall plastring	2	11.80	2.30		54.28	M <sup>2</sup>
5	plaster in scume removal outer	1	3.75	2.00		7.50	M <sup>2</sup>
		1	2.69	2.00		5.38	M <sup>2</sup>
		1	1.46	2.00		2.92	M <sup>2</sup>
6	plaster in scume removal inner	2	3.30	2.00		13.20	M <sup>2</sup>
		4	1.00	2.00		8.00	M <sup>2</sup>
7	screening outer	2	2.20	1.55		6.82	M <sup>2</sup>
	screening inner	2	2.43	1.55		7.53	M <sup>2</sup>
8	gritt chamber outer	3	1.66	1.55		7.72	M <sup>2</sup>
		1	0.60	1.55		0.93	M <sup>2</sup>
	gritt chamber inner	3	1.20	0.90		3.24	M <sup>2</sup>
		1	0.60	0.90		0.54	M <sup>2</sup>
						<b>Total:-</b>	<b>207.56</b>

**PART 2) GAURD ROOM ,TOILET, BOUNDARY WALL**

**(1) :- Excavation For Guard Room Foundation/Pilling**

1	footing Excavation	6	1.50	1.50	1.00	13.50	M <sup>3</sup>
2	Excavation GUARD RM wall foundation long wall	2	2.80	0.60	0.60	2.02	M <sup>3</sup>
	Excavation GUARD RM wall foundation short wall	2	1.80	0.60	0.60	1.30	M <sup>3</sup>
	Excavation TOI. wall foundation wall	1	0.80	0.60	0.60	0.29	M <sup>3</sup>
3	Excavation for column footing (C1 type)	2	1.50	1.50	1.00	4.50	M <sup>3</sup>
4	Excavation for column footing (C2 type)	27	1.20	1.20	1.00	38.88	M <sup>3</sup>
5	Excavation below boundry wall	1	37.15	0.60	0.60	13.37	M <sup>3</sup>
						<b>Total:-</b>	<b>73.85</b>

**(2) :- PLAIN CEMENT CONCRETE WORKS (Grade :-M15)**

1	Column for guard rm& toilet	6	1.50	1.50	0.10	1.35	M <sup>3</sup>
2	Brick wall foundation PCC	1	20.00	0.40	0.10	0.80	M <sup>3</sup>
3	Gard Room Flooring PCC	1	3.00	4.00	0.05	0.60	M <sup>3</sup>
4	Toilet Flooring PCC	1	2.10	1.20	0.05	0.13	M <sup>3</sup>
5	Urine Pot Flooring PCC	1	1.70	0.70	0.05	0.06	M <sup>3</sup>
6	PCC for boundary wall column footing (C1 type)	2	1.50	1.50	0.10	0.45	M <sup>3</sup>
7	PCC for boundary wall column footing (C2 type)	27	1.20	1.20	0.10	3.89	M <sup>3</sup>
8	PCC below boundry wall	1	37.15	0.60	0.10	2.23	M <sup>3</sup>

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H & D (M.)	QTY	Unit
						Total:-	
<b>(3) Footing</b>							
1	column footing raft for GUARD RM& TOI. (M20)	6	1.20	1.20	0.25	2.16	M <sup>3</sup>
2	RAFT for boundary wall column footing (C1 type)	2	1.20	1.20	0.25	0.72	M <sup>3</sup>
3	RAFT for boundary wall column footing (C2 type)	27	1.00	1.00	0.25	6.75	M <sup>3</sup>
						<b>Total:-</b>	<b>9.63</b> M <sup>3</sup>
<b>(4) Column</b>							
1	GUARD RM& TOI. Column (M20)	6	0.23	0.23	4.25	1.35	M <sup>3</sup>
2	boundary wall column(C1 type)	2	0.40	0.40	1.60	0.51	M <sup>3</sup>
3	boundary wall column (C2 type)	27	0.23	0.23	1.92	2.74	M <sup>3</sup>
						<b>Total:-</b>	<b>4.60</b> M <sup>3</sup>
<b>(5) Beam &amp; lintal beam (M20)</b>							
1	Slab beam long span	2	4.46	0.23	0.20	0.41	M <sup>3</sup>
2	Slab beam short span	2	3.00	0.23	0.20	0.28	M <sup>3</sup>
3	Toilet Slab Beam Long span slab beam	1	2.60	0.23	0.30	0.18	M <sup>3</sup>
4	Toilet Slab Beam Short span slab beam	2	1.20	0.23	0.30	0.17	M <sup>3</sup>
5	Plinth Beam long span	2	4.00	0.23	0.30	0.55	M <sup>3</sup>
6	Plinth Beam short span	2	3.00	0.23	0.30	0.41	M <sup>3</sup>
7	Lintel beam above door	2	3.60	0.23	0.23	0.38	M <sup>3</sup>
8	Lintel beam above window	2	1.50	0.23	0.23	0.16	M <sup>3</sup>
9	Toilet Long span plinth beam	1	2.60	0.23	0.30	0.18	M <sup>3</sup>
10	Toilet Short span plinth beam	2	1.20	0.23	0.30	0.17	M <sup>3</sup>
11	BOUNDARY WALL PLINTH BEAM	1	63.89	0.23	0.23	3.38	M <sup>3</sup>
						<b>Total:-</b>	<b>6.26</b> M <sup>3</sup>
<b>(6) RCC WALL &amp; SLAB (M20)</b>							
1	Guard room	1	4.66	3.66	0.13	2.13	M <sup>3</sup>
2	Toilet Short span wall	1	2.66	1.45	0.13	0.48	M <sup>3</sup>
						<b>Total:-</b>	<b>2.61</b> M <sup>3</sup>
<b>(7) :- Providing and fixing in position steel bar reinforcement of various diameters for RCC piles, caps, footings,</b>							
	TOTAL RCC QTY.=9.63+4.60+6.26+2.61=23.11					2.08	MT
	STEEL -90KG/CUM						
<b>(8) :- BRICKS MESONARY WORKS</b>							
1	guard room long wall	2	4.00	0.23	3.30	6.07	M <sup>3</sup>
2	guard room long wall	2	3.00	0.23	3.30	4.55	M <sup>3</sup>
3	Toilet long wall	1	2.56	0.23	3.30	1.94	M <sup>3</sup>
4	Toilet Short wall	1	1.05	0.23	3.30	0.80	M <sup>3</sup>
5	BOUNDARY WALL	1	63.89	0.23	1.67	24.54	M <sup>3</sup>
						<b>Total:-</b>	<b>37.91</b> M <sup>3</sup>
<b>(9) :- PLASTERING WORKS</b>							
1	Plastring long wall (Inner)	2	4.00		3.00	24.00	M <sup>2</sup>
2	Plastring short wall (Inner)	2	3.00		3.00	18.00	M <sup>2</sup>
3	Plastring Ceiling	1	4.00	3.00		12.00	M <sup>2</sup>
4	Plastring long wall (Outer)	2	4.46		3.73	33.23	M <sup>2</sup>
5	Plastring short wall (Outer)	2	3.46		3.73	25.78	M <sup>2</sup>
6	Plastring toilet (Inner)	2	2.10		3.00	12.60	M <sup>2</sup>
7	Plastring toilet (Inner)	2	1.05		3.00	6.30	M <sup>2</sup>
8	Plastring toilet CEILING (Inner)	1	2.10	1.05		2.21	M <sup>2</sup>
9	Plastring long wall (Outer)	1	2.56		3.73	9.55	M <sup>2</sup>
10	Plastring short wall (Outer)	1	1.45		3.73	5.41	M <sup>2</sup>
11	Plastring boundry wall at Inner side	1	70.43		1.67	117.62	M <sup>2</sup>
12	Plastring boundry wall at outer side	1	71.58		1.67	119.54	M <sup>2</sup>
						<b>Total:-</b>	<b>386.22</b> M <sup>2</sup>
<b>(10) Painting/Colouring Work for Guard Room</b>							
	As per item no.9					<b>386.22</b>	M <sup>2</sup>
<b>(11) Guard Room Door</b>							
	Toilet Door	1	0.76		1.83	1.39	M <sup>2</sup>

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H& D (M.)			Unit
						QTY	Total:-	
							3.34	M <sup>2</sup>
12)	Window	2	0.90		0.90	1.62		M <sup>2</sup>
13)	VENTILATOR	2	0.45		0.45	0.41		M <sup>2</sup>
14)	<b>Guard Room Plinth filling</b>	1.00	4.00	3.00	0.60	7.20		M <sup>3</sup>
	Toilet Plinth filling	1.00	2.10	1.05	0.60	1.32		M <sup>3</sup>
						<b>Total:-</b>	<b>8.52</b>	M <sup>3</sup>
	OTHERS							
1)	<b>MS gate</b>							
	Main Gate	2	2.50			2.00	no	
	WICKET Gate	1	1.00			1.00	no.	
2)	W.C. PAN	1	Nos					
3)	Wash Basin	1	Nos					
4)	Urin Pot	2	Nos					
5)	UPVC PIPE 4" dia	6	mt					
6)	Electric Fan	1	Nos					
7)	LED BULB 100 WATT	4	Nos					
8)	Bulb Holders	4	Nos					
9)	Electric wire	20	MT					
10)	PVC pipe for electric fitting	10	MT					
11)	Power switch Board	2	Nos					

DESIGN OF 0 KLD CAPACIT FSTP			
Capacity	0	KLD	
Values adopted from CPHEEO manual on sewage treatment plant			
November 2013 Chapter 9 table 9.13 page 9-43			
Parameter	Value	Parameter	Unit
Quantitative Sludge	10		KLD
Colour	Bluish	Unobjectionable	
Odour	Smell like H <sub>2</sub> S	Unobjectionable	
Temperature	18°C-27°C	-	
pH	5.5-9.0		
total solid	40000 0	≤100	Mg/L
total dissolved solid	25000 0		Mg/L
Suspended solid	15000 0	≤100	Mg/L
Volatile Solids	10000 0		Mg/L
Total BOD <sub>2</sub> 20°C	100	≤10	Mg/L
COD	2000	≤50	Mg/L
Oil & Grease	6000	≤10	Mg/L
Total Nitrogen TKN	700	-	Mg/L
N-NH <sub>3</sub>	150 00	-	Mg/L
Org-N	550 00	-	Mg/L
N-NO <sub>2</sub>	-	-	Mg/L
Total P	250	-	Mg/L
Alkalinity		-	Mg/L
total Coliform	100000	≤1000	Mpn/100 MI
Minimum values have been adopted between discharge standard into inland surface water and that for land for irrigation			
TREATED SEWAGE QUALITY			
	Air CPC INGT		
BOD 20°C	≤10	Mg/L	
Total Suspended Solid	≤100	Mg/L	
COD	≤50	Mg/L	
ammonium	≤10	Mg/L	
Cd	≤5	Mg/L	
Cr	≤50	Mg/L	
Cu	≤300	Mg/L	
Pb	≤100	Mg/L	
Hg	≤0.15	Mg/L	
Ni	≤50	Mg/L	
Chlorides	≤1000	Mg/L	
C/N Ratio	20:40		
Faecal Coliform	1000	MPN/100MI	
Quantities of Sewage Generated	10000.00	Lpd	
	10.00	KLD	
	10.00	Cum/da	
Raw Sewage Characteristics			
Average Sewage flow entering the treatment plant	10000.00	lpd	
Assumed Peak Factor	1.00		DEWATS
Peak Sewage flow entering the treatment plant	10000.00	lpd	
COD	25000.00	mg/Lt	
BOD	6500.00	mg/Lt	
TDS	15200.00	mg/Lt	
TSS	15000.00	mg/Lt	
pH	4.5 to 11.5		
Influent GRIT Chamber			
Number of units	1	no	Number of units
total collection time (leading hour)	8	hour	
Quantities of Flow Ave	3000 l/s per hour	beverage collecting vehicle	
	0.05	Cum/minute	

DESIGN F 0 KLD CAPACIT FSTP			
C A r F	0	KLD	
Assumed Detention period	14.00	minute	
Volume of the Inlet Chamber	0.70	Cum	
Assumed Depth of Inlet	0.50	m	
Area Required for Inlet Chamber	1.40	Sqm	
Assumed Length to Breadth Ratio	1.00		
Breadth of the Tank	1.20	m	
length of the Tank	1.20	m	
Procedure Details for Inlet GRIT CHAMBER 02 02 00 SWD			
<b>2 Screen Channel</b>			
Peak Design Flow	0.000	C	
Assume Clear Spacing between bars	10.00	mm	20-50mm, pg.201 of CPHEO Manual
Velocity ahead of screen V	0.40	m/s	pg. 202 of CPHEO Manual
Area of Screen Channel, A	0.00	m <sup>2</sup>	
Width	0.15		
Keeping Side Water Depth	0.25	m	
<b>OVER ALL Width of screen W</b>	0.00	m	
Width	0.00	m	
Water depth upstream, A/W	0.25	m	
diameter of bar	0.006	m	
Number of opening in chamber, W X.o + X - 1 at here , X No. of Opening o Clear Space between bars at This one of that	0.00	no	
Width	38.00	no	
Total effective width of opening, W	0.372	m	
Assume Angle of inclination	60.00	Degree	
Assumed Detention Period in the Screen Channel	5.00	s	
Assume Length of the Screen chamber	2.00	m	
Width	0.00	m	
Inclined height of the Screen, H	0.29	m	
Velocity through the Screen, V/H1/W	0.00	m/s	
Head loss thru Screen in normal condition, h1=0.0729 V <sup>2</sup> -Va <sup>2</sup>	-0.01	m	less than 0.15 m hence 0
Head loss on 50%logging h1=0.0729(2.5V <sup>2</sup> -Va <sup>2</sup> )	-0.01	m	less than 0.3 m hence 0
Water Depth downstream Hb, a-b+Va <sup>2</sup> /2g-V <sup>2</sup> /2g+Ha-Headloss thru Screen in normal condition	0.27	m	
Water Depth downstream Hb, a-b+Va <sup>2</sup> /2g-V <sup>2</sup> /2g+Ha-Headloss thru Screen in Logged condition	0.27	m	
Procedure Details for Screen 0 M 0 M 0 M SWD 0.2 M			
Procedure for Design			
OD	00.00	mg/Lt	
CD	25000.00	mg/Lt	





DESIGN 0 KLD CAPACIT FSTP			
Capacity	0	KLD	
<b>Process Parameters</b>			
Ave. Influent BOD, $S_{in}$	175.5	g/m <sup>3</sup>	
Estimated Eff. BOD, $S_{eff}$	35	g/m <sup>3</sup>	
Design Value of BOD Surface			
Area Loading Rate (SALR)	15	g/m <sup>2</sup> /d	
<b>Process Standards</b>			
Target Effluent BOD, $S_{out}$	7	g/m <sup>3</sup>	
Estimated Infl. BOD, $S_{in}$	35	g/m <sup>3</sup>	
Design Value of BOD Surface			
Area Loading Rate (SALR)	5	g/m <sup>2</sup> /d	
Carrier Specific Surface Area	396	m <sup>2</sup> /m <sup>3</sup>	
Carrier Specific Wt.	20	g/m <sup>3</sup>	
Liquid Depth in Tank	2.20	m	
Tank L:W ratio	1.5		
Design Carrier Fill	40		
Carrier Void Space	60		
BOD Daily Loading	0	g/day	
	20	g/day	
Carrier Surface Area needed	93.7	m <sup>2</sup>	
Calculated Carrier Volume	0.237	m <sup>3</sup>	
Liquid Depth in Tank	2.2	m	
Calculated Tank Width	1.2	m	
Calculated Tank Length	2.1		
Calculated Tank Volume	5.5	m <sup>3</sup>	
<b>Standards</b>			
BOD Daily Loading	0	g/day	
	20	g/day	
Liquid Depth in Tank	2.2	m	
Calculated Tank Width	1.2	m	
Calculated Tank Length	1.5	m	
Calculated Tank Volume	0	m <sup>3</sup>	
<b>OD AND COD REDUCTION AFTER AREATION 1 AND AREATION 2</b>			
OD Reduction	0		
COD Reduction	0		
OD Reduction after Areation 2	0	mg/L	
COD Reduction after Areation 2	135.00	mg/L	
<b>Reduced OD and COD after Areation 2</b>			
OD Reduction	0		
COD Reduction	0		
OD Reduction after Areation 2	0.02	mg/L	
COD Reduction after Areation 2	27.00	mg/L	
<b>Process Control and Monitoring</b>			
Instrumentation and Control			
20 dials for monitoring and control			
IV Control Area			
O <sub>2</sub> needed per g BOD	2.00	g O <sub>2</sub> /g BOD	



DESIGN 0 F 0 KLD CAPACIT 0 FSTP			
C 00000 A 0 r 000 F 00	0	KLD	
Area of the Tan 0	0.28	S 0m	
Square tan 0 S 0e	0.50	m	
0 r 000 r 00 0 r 00000 000			
<b>12</b> Pr 00000 S 0d F 00r			
Average Flo 0	10.00	Cum/da 0	
Filter Operating hour 0	8.00	hr 0	
Operating 0 0	1.25	Cum/hr	
Filter Loading rate	2.00	Cum/hr/S 0m	
Area of the Filter required	0.63	S 0m	
0 r 000 d 0 FRP VESSEL 0" 000"			
<b>13</b> Pr 00000 d 0 r 000 F 00r			
Average Flo 0	10.00	Cum/da 0	
Filter Operating hour 0	8.00	hr 0	
Operating 0 0	1.25	Cum/hr	
Filter Loading rate	2.00	Cum/hr/S 0m	
Area of the Filter required	0.63	S 0m	
0 r 000 d 0 FRP VESSEL 0" 000"			
<b>14</b> E 00000 D 00000 D 00000 d 0 00r			
000 D R 00000	0000	0	
C 000 D R 00000	0000	0	
000 D R 00000 r d 00000 d 0 00r	00000	mg/Lt	
C 000 D R 00000 r d 00000 d 0 00r	22.95	mg/Lt	
<b>15</b> F 00000 r 000 d P 000			
Pr 00000 F 00000 r 000 d 0000000	020	C 0000r	
	0000	000d	
<b>16</b> D 00000 r 0000000 IN LINE			
000 D R 00000	2000	0	
C 000 D R 00000	2000	0	
000 D R 00000 r 0000000	00000	mg/Lt	
C 000 D R 00000 r 0000000	18.36	mg/Lt	
<b>16</b> TREATED WATER TANK			
total Quantit 0 e 00000	10.00	CUM	
TOTAL LOSS IN PROCESS	15.0	0	
TOTAL TREATED WATER	8.5	CUM	

DESIGN OF 0 KLD CAPACIT FSTP			
Capacity of the tank	0	KLD	
Peak Design Flow	8.50	Cum/day	
Assumed Detention period	2	hour	
Volume of the tank	2.125	Cum	
Assumed Depth of Liquid Column	2	m	
Area required for the tank	1.0625	Sq m	
No. of Tank Proposed	1		
area required for each tank	1.0625	Sq m	
Length to Breadth ratio	1		
Breadth of the tank	1.5	m	
Length of the tank	1.5	m	

DEPARTMENT:  
MJP

PROJECT:  
10 KLD FSTP

NOTE:  
1.ALL DIMENSIONS & LEVEL ARE IN MILLIMETERS  
2.ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.  
3.ANY DISCREPANCY IN THIS DRAWING SHALL BE BROUGHT TO BE IN NOTICE OF CONSULTANT.

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## AREA STATEMENT

TOTAL AREA 25 Mt.X13.6 Mt.

AREA OF PLANT 15.5 Mt.X7.6 Mt.

## BOUNDARY WALL      71.5 RMt.

MAIN GATE      4.5 RMt.

WICKET GATE 1.2 RMT.

## INDEX

## REINFORCED CEMENT CON.

## PLAIN CEMENT CONCRETE

 BRICK MASONARY.

DRAWING TITLE:  
□ 0 KLD FSTP GA □ RD  
R □ M □ T □ I □ CIVIL GA  
DRAWING

DRAWING NO.: SHEET NO.:

DDB/PRO/GA-01

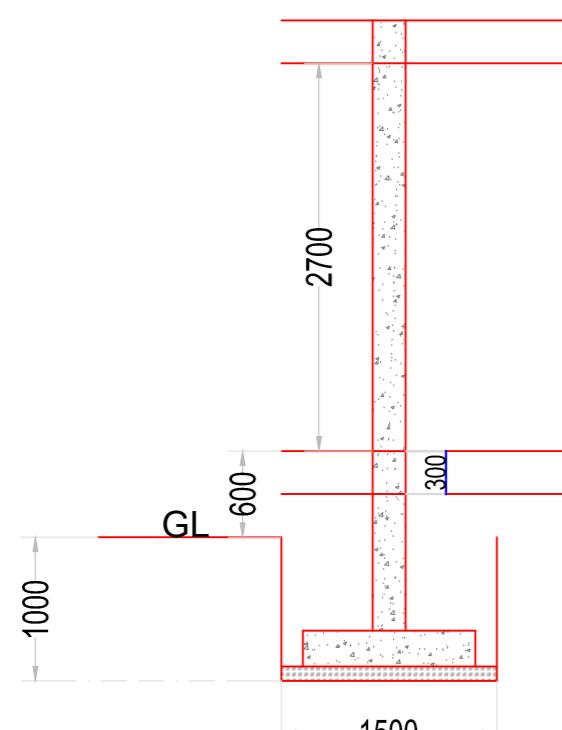
01B/02

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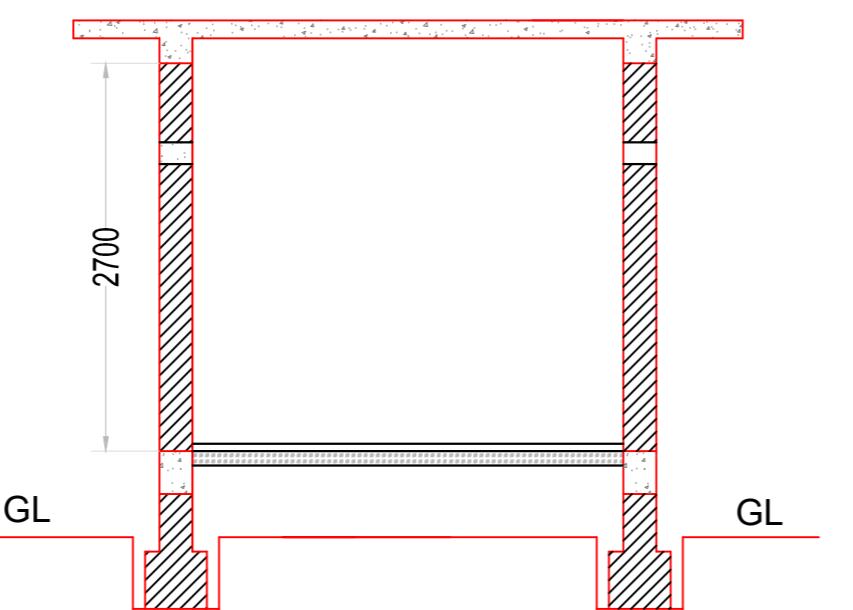
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19.02.2021

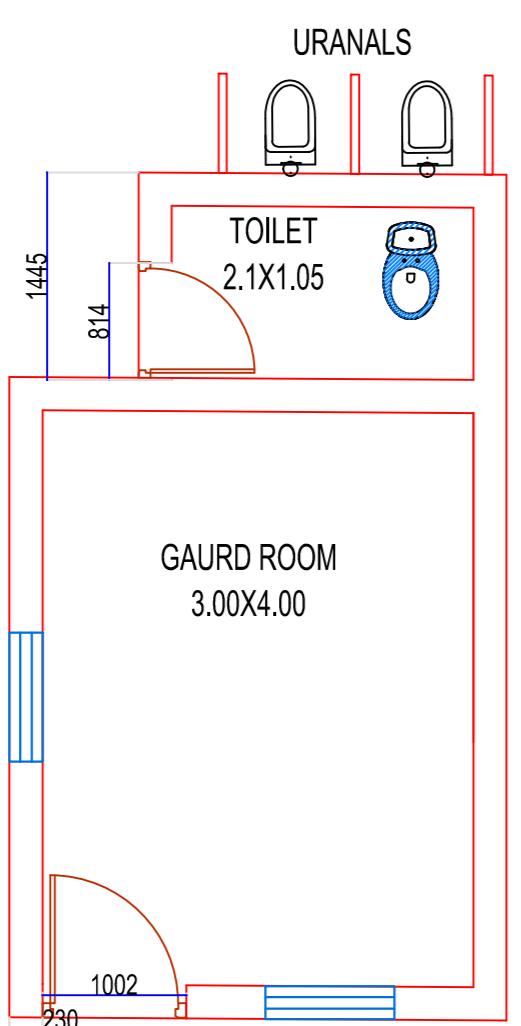
## CONTRACTOR



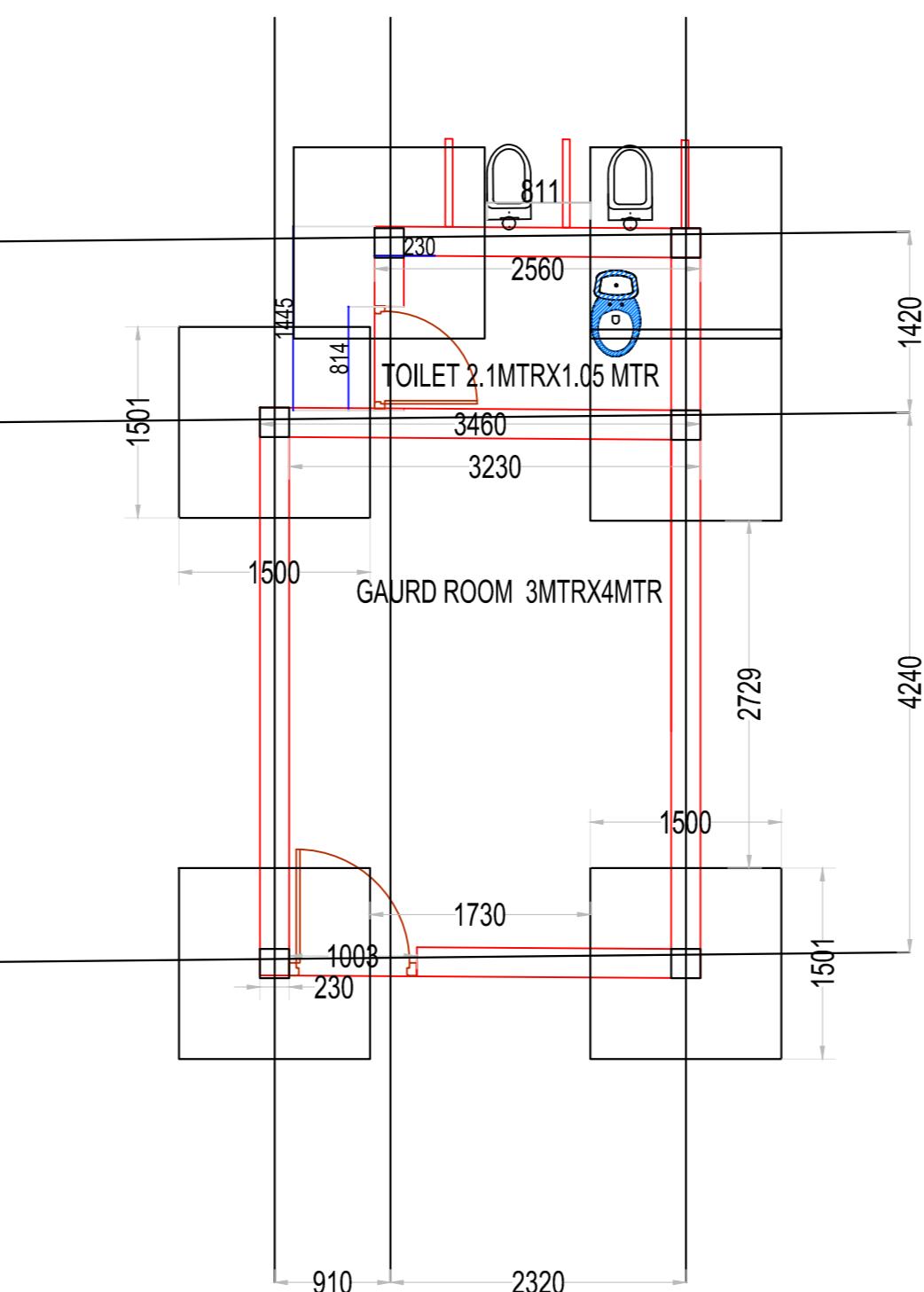
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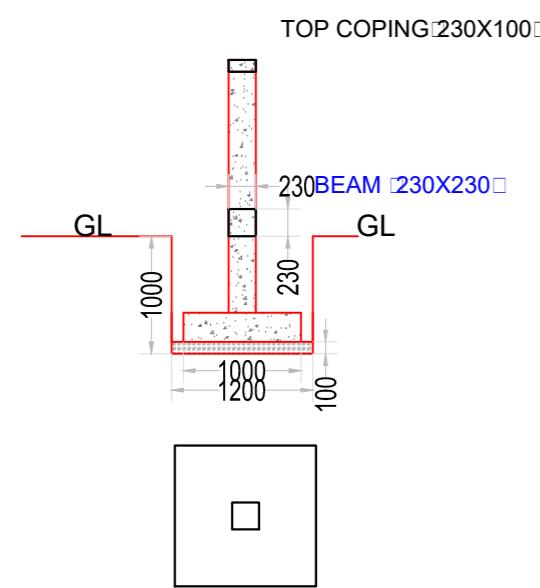
## SECTION OF GAUARD ROOM



## PLAN OF GUARD ROOM&TOILET

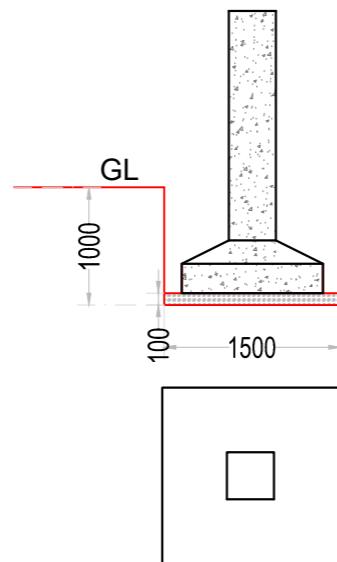


# CENTRE LINE PLAN OF GAUARD ROOM&TOILET

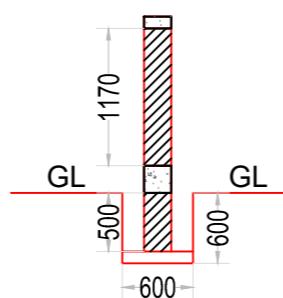


## DETAIL OF C2

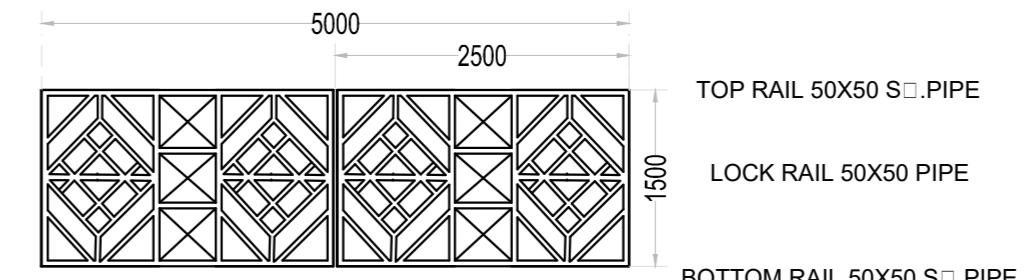
### 27 NO. □



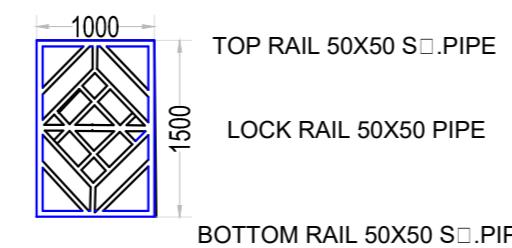
**DETAIL OF  
C12 NO.□**



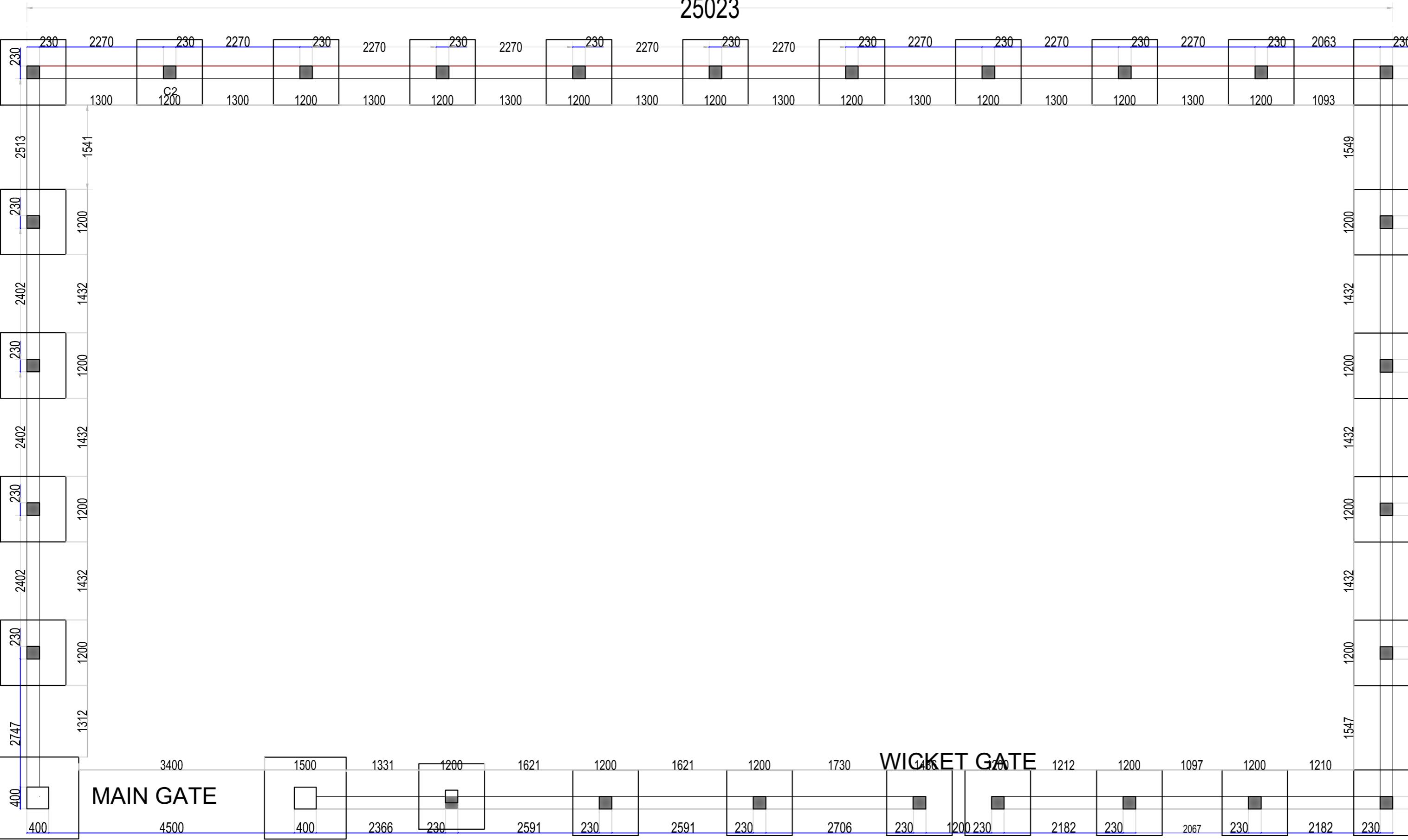
# MAIN GATE



## MAIN GATE



## WICKET GATE



DEPARTMENT:  
**MJP**

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PROJECT:  
**10 KLD FSTP**

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NOTE:

- 1.ALL DIMENSIONS & LEVEL ARE IN MILLIMETERS
- 2.ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- 3.ANY DISCREPANCY IN THIS DRAWING SHALL BE BROUGHT TO BE IN NOTICE OF CONSULTANT.

## AREA STATEMENT

TOTAL AREA 25 Mt.X13.6 Mt.

AREA OF PLANT 15.5 Mt.X7.6 Mt.

BOUNDARY WALL 71.5 RMT.

MAIN GATE      4.5 RMt.

WICKET GATE      1.2 RMt.

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## INDEX

## REINFORCED CEMENT CON.

## PLAIN CEMENT CONCRETE

 BRICK MASONARY.

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**DRAWING TITLE:**

0 KLD FSTP 000NDAR0

WING NO.: SHEET NO.:

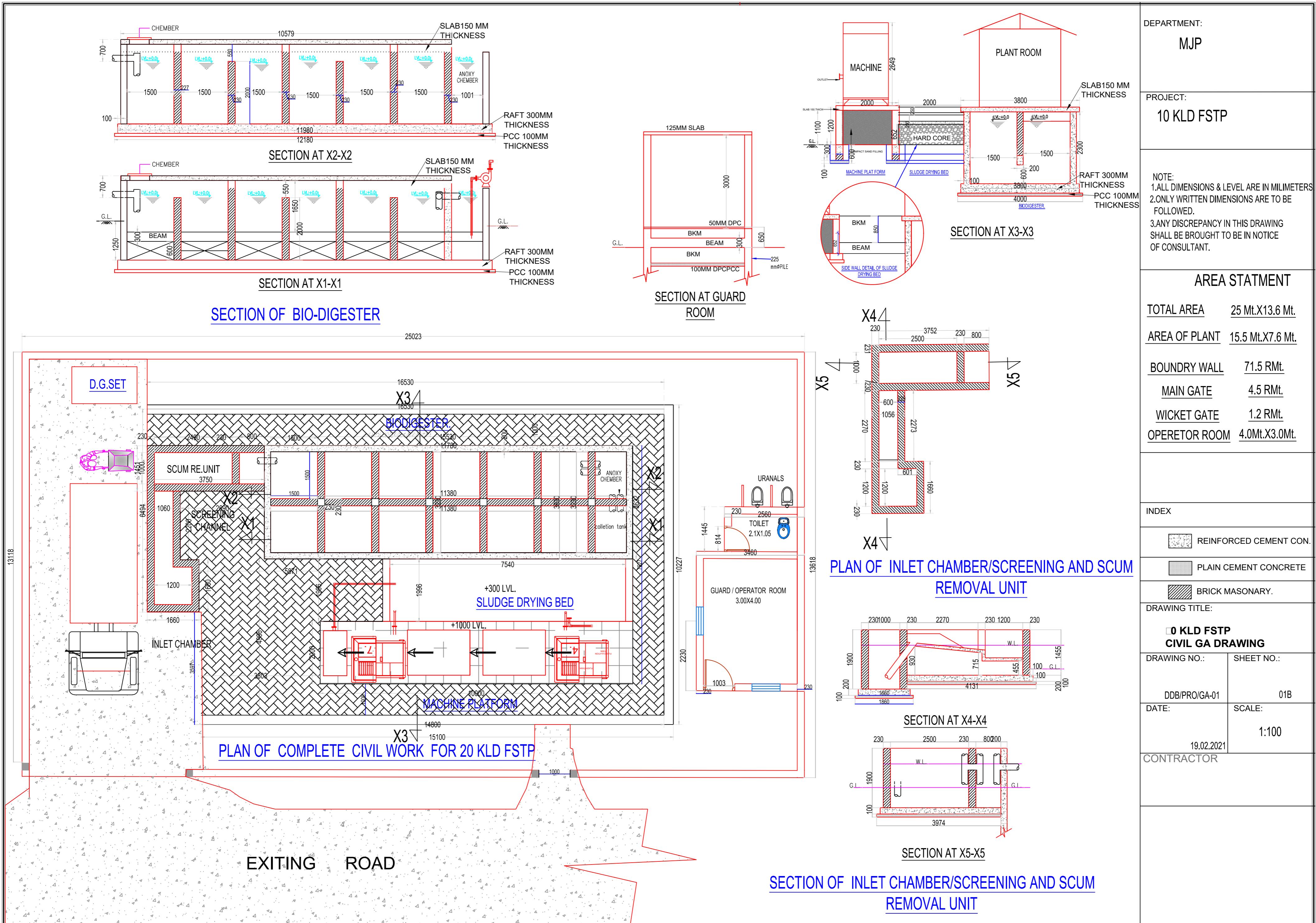
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1:100

19.02.2021





**ESTIMATE FOR 20 KLD FSTP**  
**MEASUREMENT SHEET**

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H& D (M.)	Unit	
						QTY	
<b>PART 1 FSTP</b>							
<b>(1)- EXCAVATION WORKS</b>							
1	BIO-DIGESTER	1	12.75	4.63	2.44	144.04	M <sup>3</sup>
2	SLUDGE DRYING BED FOUNDATION	2	2.00	0.60	0.60	1.44	M <sup>3</sup>
3	MACHINE PLATFORM long span	2	10.37	0.60	0.60	7.47	M <sup>3</sup>
4	MACHINE PLATFORM short span	2	1.17	0.60	0.60	0.84	M <sup>3</sup>
5	SCUM REMOVAL CHAMBER	1	4.25	2.46	1.05	10.98	M <sup>3</sup>
6	SCREENING CHAMBER	1	1.20	2.06	0.60	1.48	M <sup>3</sup>
7	GRIT CHAMBER/INLET	1	2.66	2.66	0.60	4.25	M <sup>3</sup>
					<b>Total:-</b>	<b>170.49</b>	
<b>(2)- PLAIN CEMENT CONCRETE WORKS (Grade :-M15)</b>							
1	BIO-DIGESTER PCC	1	12.20	4.03	0.10	4.92	M <sup>3</sup>
2	SLUDGE DRYING BED BASE PCC	1	7.54	2.00	0.10	1.51	M <sup>3</sup>
3	BELOW SIDE WALL PCC	2	2.00	0.60	0.10	0.24	M <sup>3</sup>
4	MACHINE PLAT FROM FOUNDATION WALL PCC long span	2	10.37	0.60	0.10	1.24	M <sup>3</sup>
5	MACHINE PLAT FROM FOUNDATION WALL PCC short span	2	1.17	0.60	0.10	0.14	M <sup>3</sup>
6	SCUM REMOVAL CHAMBER	1	3.96	1.86	0.10	0.74	M <sup>3</sup>
7	SCREENING CHAMBER	1	1.20	1.46	0.10	0.18	M <sup>3</sup>
8	GRIT CHAMBER/INLET	1	2.06	2.06	0.10	0.42	M <sup>3</sup>
9	AROUND THE PEVERS BLOCKS OF PAVMENT	1	45.356	0.3	0.10	1.36	M <sup>3</sup>
10	BASE CONC.IN TRUCK PARKING	1	13.1	4.66	0.10	6.10	M <sup>3</sup>
					<b>Total:-</b>	<b>16.85</b>	
<b>(3) :- REINFORCEMENT CONCRETE WORKS RAFT (Grade :-M30)</b>							
1	RAFT(30) FOR BIO-DIGESTER	1	11.98	3.83	0.30	13.77	M <sup>3</sup>
2	RAFT (M30) FRO SC UM REMOVAL CHAMBER	1	3.86	1.66	0.20	1.28	M <sup>3</sup>
3	RAFT (M30) FOR SCREENING CHAMBER	1	2.10	1.26	0.20	0.53	M <sup>3</sup>
4	RAFT (M30) GRIT CHAMBER	1	1.86	1.86	0.20	0.69	M <sup>3</sup>
					<b>Total:-</b>	<b>16.27</b>	
<b>(4) :- REINFORCEMENT CONCRETE WORKS FOR BEAM(Grade :-M30)</b>							
1	SLUDGE DRYING BED SIDE BEAM	2	2.20	0.23	0.23	0.23	M <sup>3</sup>
2	BEAM PARTITION CENTER WALL	1	10.30	0.23	0.30	0.71	M <sup>3</sup>
3	FOUNDATION BEAM IN MACHINE PLAT FORM LONG SPAN	2	10.00	0.23	0.30	1.38	
	BEAM IN MACHINE PLAT FORM SHORT SPAN	2	1.54	0.23	0.30	0.21	
					<b>TOTAL</b>	<b>2.54</b>	
<b>(5) :- REINFORCEMENT CONCRETE WORKS FOR COLUMN (Grade :-M30)</b>							
1	COLUMN (M300)	6	0.23	0.23	3.55	1.13	M <sup>3</sup>
					<b>TOTAL</b>	<b>1.13</b>	
<b>(6) :- REINFORCEMENT CONCRETE WORKS FOR Vertical Wall/SLAB (Grade :-M30)</b>							
1	BIO -DIGESTER LONG SPAN OUTER WALL	2	11.77	0.20	3.55	16.71	M <sup>3</sup>
2	BIO-DIGESTER SHORT SPAN OUTER WALL	2	3.23	0.20	3.55	4.59	M <sup>3</sup>
3	BIO-DIGESTER ANOXY CHAMBER PARTITION WALL	1	3.23	0.23	3.55	2.64	M <sup>3</sup>
4	BIO-DIGESTER SLAB	1	11.80	3.63	0.15	6.43	M <sup>3</sup>
5	MACHINE PLAT FORM SLAB	1	10.00	2.00	0.15	3.00	M <sup>3</sup>
					<b>TOTAL</b>	<b>33.36</b>	
<b>(7) :- Providing and fixing in position steel bar reinforcement of various diameters for RCC piles, caps, footings, foundations,slabs, beams, columns, ----etc. complete.(including cost of binding wire) IS 1786, (Bd-F-17/306)</b>							
	TOTAL RCC QTY.		53.29				
	STEEL -90KG/CUM					<b>4.80</b>	MT
<b>(8) :- BRICKS MESONARY WORKS</b>							
1	BIO-DIGESTER PARTION WALL(BUFFLE)	5	1.50	0.23	3.00	5.18	M <sup>3</sup>
2	BIO-DIGESTER RETURNING WALL	7	1.50	0.23	3.55	8.57	M <sup>3</sup>
3	BIO-DIGESTER CENTRE WALL	1	10.00	0.23	2.65	6.10	M <sup>3</sup>
4	MACHINE PLAT FORM FOUNDATION WALL long span	2	10.00	0.23	0.20	0.92	M <sup>3</sup>
5	MACHINE PLAT FORM FOUNDATION WALL short span	2	1.54	0.23	0.20	0.14	M <sup>3</sup>
6	MACHINE PLATFORM ABOVE GROUND LEVEL LONG WALL	2	10.00	0.23	1.12	5.15	M <sup>3</sup>
7	MACHINE PLATFORM ABOVE GROUND LEVEL SHORT WALL	2	1.54	0.23	1.12	0.79	M <sup>3</sup>

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H & D (M.)	QTY	Unit
8	SLUDGE DRYING SHORT SPAN WALL	2	2.00	0.23	1.25	1.15	M <sup>3</sup>
9	SCUM REMOVAL CHAMBER LONG SPAN WALL	2	3.75	0.23	2.00	3.45	M <sup>3</sup>
10	SCUM REMOVAL SHORT SPAN WALL	2	1.00	0.23	2.00	0.92	M <sup>3</sup>
11	SCREENING CHAMBER LONG SPAN WALL	2	2.27	0.23	1.45	1.51	M <sup>3</sup>
12	GRIT CHAMBER LONG SPAN WALL	2	1.66	0.23	1.45	1.11	M <sup>3</sup>
13	GRIT CHAMBER SHORT SPAN WALL	1	1.20	0.23	1.45	0.40	M <sup>3</sup>
14	GRIT CHAMBER SHORT SPAN WALL	1	0.60	0.23	1.45	0.20	M <sup>3</sup>
						<b>Total:-</b>	<b>35.59</b>

**(9) :- Hard Course/ MOORUM Filling Work**

1	Sludge Drying Bed Hard course Filling (Moorum)	1	7.54	2.00	0.65	9.83	M <sup>3</sup>
2	Hard course Filling Machine Platform Foundation	1	9.54	1.60	1.10	16.79	M <sup>3</sup>
						<b>Total:-</b>	<b>26.62</b>

**(10) :- Media Filter FOR SLUDGE DRYING BED**

1	2 to 12 mm mix greval filter media	1	7.54	2.00	0.20	3.02	M <sup>3</sup>
						<b>Total:-</b>	<b>3.02</b>

**(11) :- Pevers Block Work**

1	Pevers Blocks for sludge drying bed	1	7.54	2.00		15.08	M <sup>2</sup>
2	Pevers Blocks In front of Plant Long span	1	16.5	1		16.50	M <sup>2</sup>
3	Pevers Blocks In Left side of Plant Long span	1	7.62	1		7.62	M <sup>2</sup>
4	Pevers Blocks In back side of Plant Long span	1	14.8	1		14.80	M <sup>2</sup>
5	Pevers Blocks in side of screen & Scum chamber	1	4	5.8		23.20	M <sup>2</sup>
6	Pevers Blocks in side of screen & Scum chamber	1	2.2	2.7		5.94	M <sup>2</sup>
						<b>Total:-</b>	<b>83.14</b>

**(12) :- PLASTRING IN BIO DIGESTER**

1	Both side plastering in Bio-Digester chamber	10	1.50	3.00		45.00	M <sup>2</sup>
2	Both side plastering in Bio-Digester chamber	22	1.50	3.55		117.15	M <sup>2</sup>
3	Center wall plastering in Bio-Digester chamber	2	10.30	2.30		47.38	M <sup>2</sup>
4	Bio digester outer long wall plastring	2	11.80	3.55		83.78	M <sup>2</sup>
5	plaster in scume removal outer	1	3.75	2.00		7.50	M <sup>2</sup>
		1	2.69	2.00		5.38	M <sup>2</sup>
		1	1.46	2.00		2.92	M <sup>2</sup>
6	plaster in scume removal inner	2	3.30	2.00		13.20	M <sup>2</sup>
		4	1.00	2.00		8.00	M <sup>2</sup>
7	screening outer	2	2.20	1.55		6.82	M <sup>2</sup>
	screening inner	2	2.43	1.55		7.53	M <sup>2</sup>
8	gritt chamber outer	3	1.66	1.55		7.72	M <sup>2</sup>
		1	0.60	1.55		0.93	M <sup>2</sup>
	gritt chamber inner	3	1.20	0.90		3.24	M <sup>2</sup>
		1	0.60	0.90		0.54	M <sup>2</sup>
						<b>Total:-</b>	<b>293.31</b>

**PART 2) GAURD ROOM ,TOILET, BOUNDARY WALL**

**(1) :- Excavation For Guard Room Foundation/Pilling**

1	footing Excavation	6	1.50	1.50	1.00	13.50	M <sup>3</sup>
2	Excavation GUARD RM wall foundation long wall	2	2.80	0.60	0.60	2.02	M <sup>3</sup>
	Excavation GUARD RM wall foundation short wall	2	1.80	0.60	0.60	1.30	M <sup>3</sup>
	Excavation TOI. wall foundation wall	1	0.80	0.60	0.60	0.29	M <sup>3</sup>
3	Excavation for column footing (C1 type)	2	1.50	1.50	1.00	4.50	M <sup>3</sup>
4	Excavation for column footing (C2 type)	27	1.20	1.20	1.00	38.88	M <sup>3</sup>
5	Excavation below boundry wall	1	37.15	0.60	0.60	13.37	M <sup>3</sup>
						<b>Total:-</b>	<b>73.85</b>

**(2) :- PLAIN CEMENT CONCRETE WORKS (Grade :-M15)**

1	Column for guard rm& toilet	6	1.50	1.50	0.10	1.35	M <sup>3</sup>
2	Brick wall foundation PCC	1	20.00	0.40	0.10	0.80	M <sup>3</sup>
3	Gard Room Flooring PCC	1	3.00	4.00	0.05	0.60	M <sup>3</sup>
4	Toilet Flooring PCC	1	2.10	1.20	0.05	0.13	M <sup>3</sup>
5	Urine Pot Flooring PCC	1	1.70	0.70	0.05	0.06	M <sup>3</sup>
6	PCC for boundary wall column footing (C1 type)	2	1.50	1.50	0.10	0.45	M <sup>3</sup>
7	PCC for boundary wall column footing (C2 type)	27	1.20	1.20	0.10	3.89	M <sup>3</sup>
8	PCC below boundry wall	1	37.15	0.60	0.10	2.23	M <sup>3</sup>

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H & D (M.)	QTY	Unit
<b>(3) Footing</b>							
1	column footing raft for GUARD RM& TOI. (M20)	6	1.20	1.20	0.25	2.16	M <sup>3</sup>
2	RAFT for boundary wall column footing (C1 type)	2	1.20	1.20	0.25	0.72	M <sup>3</sup>
3	RAFT for boundary wall column footing (C2 type)	27	1.00	1.00	0.25	6.75	M <sup>3</sup>
						<b>Total:-</b>	<b>9.63</b> M <sup>3</sup>
<b>(4) Column</b>							
1	GUARD RM& TOI. Column (M20)	6	0.23	0.23	4.25	1.35	M <sup>3</sup>
2	boundary wall column(C1 type)	2	0.40	0.40	1.60	0.51	M <sup>3</sup>
3	boundary wall column (C2 type)	27	0.23	0.23	1.92	2.74	M <sup>3</sup>
						<b>Total:-</b>	<b>4.60</b> M <sup>3</sup>
<b>(5) Beam &amp; lintal beam (M20)</b>							
1	Slab beam long span	2	4.46	0.23	0.20	0.41	M <sup>3</sup>
2	Slab beam short span	2	3.00	0.23	0.20	0.28	M <sup>3</sup>
3	Toilet Slab Beam Long span slab beam	1	2.60	0.23	0.30	0.18	M <sup>3</sup>
4	Toilet Slab Beam Short span slab beam	2	1.20	0.23	0.30	0.17	M <sup>3</sup>
5	Plinth Beam long span	2	4.00	0.23	0.30	0.55	M <sup>3</sup>
6	Plinth Beam short span	2	3.00	0.23	0.30	0.41	M <sup>3</sup>
7	Lintel beam above door	2	3.60	0.23	0.23	0.38	M <sup>3</sup>
8	Lintel beam above window	2	1.50	0.23	0.23	0.16	M <sup>3</sup>
9	Toilet Long span plinth beam	1	2.60	0.23	0.30	0.18	M <sup>3</sup>
10	Toilet Short span plinth beam	2	1.20	0.23	0.30	0.17	M <sup>3</sup>
11	BOUNDARY WALL PLINTH BEAM	1	63.89	0.23	0.23	3.38	M <sup>3</sup>
						<b>Total:-</b>	<b>6.26</b> M <sup>3</sup>
<b>(6) RCC WALL &amp;SLAB (M20)</b>							
1	Guard room	1	4.66	3.66	0.13	2.13	M <sup>3</sup>
2	Toilet Short span wall	1	2.66	1.45	0.13	0.48	M <sup>3</sup>
						<b>Total:-</b>	<b>2.61</b> M <sup>3</sup>
<b>(7) :- Providing and fixing in position steel bar reinforcement of various diameters for RCC piles, caps, footings,</b>							
	TOTAL RCC QTY		53.86				
	STEEL -90KG/CUM					2.08	MT
<b>(8) :- BRICKS MESONARY WORKS</b>							
1	guard room long wall	2	4.00	0.23	3.30	6.07	M <sup>3</sup>
2	guard room long wall	2	3.00	0.23	3.30	4.55	M <sup>3</sup>
3	Toilet long wall	1	2.56	0.23	3.30	1.94	M <sup>3</sup>
4	Toilet Short wall	1	1.05	0.23	3.30	0.80	M <sup>3</sup>
5	BOUNDARY WALL	1	63.89	0.23	1.67	24.54	M <sup>3</sup>
						<b>Total:-</b>	<b>37.91</b> M <sup>3</sup>
<b>(9) :- PLASTERING WORKS</b>							
1	Plastring long wall (Inner)	2	4.00		3.00	24.00	M <sup>2</sup>
2	Plastring short wall (Inner)	2	3.00		3.00	18.00	M <sup>2</sup>
3	Plastring Ceiling	1	4.00	3.00		12.00	M <sup>2</sup>
4	Plastring long wall (Outer)	2	4.46		3.73	33.23	M <sup>2</sup>
5	Plastring short wall (Outer)	2	3.46		3.73	25.78	M <sup>2</sup>
6	Plastring toilet (Inner)	2	2.10		3.00	12.60	M <sup>2</sup>
7	Plastring toilet (Inner)	2	1.05		3.00	6.30	M <sup>2</sup>
8	Plastring toilet CEILING (Inner)	1	2.10	1.05		2.21	M <sup>2</sup>
9	Plastring long wall (Outer)	1	2.56		3.73	9.55	M <sup>2</sup>
10	Plastring short wall (Outer)	1	1.45		3.73	5.41	M <sup>2</sup>
11	Plastring boundry wall at Inner side	1	70.43		1.67	117.62	M <sup>2</sup>
12	Plastring boundry wall at outer side	1	71.58		1.67	119.54	M <sup>2</sup>
						<b>Total:-</b>	<b>386.22</b> M <sup>2</sup>
<b>(10) Painting/Colouring Work for Guard Room</b>							
	As per item no.9					386.22	M <sup>2</sup>
<b>(11) Guard Room Door</b>							
	Toilet Door	1	0.76		1.83	1.39	M <sup>2</sup>

S No.	Particulars of item & details of works	No.	L. (M.)	B. (M.)	H& D (M.)	Unit	
						QTY	
						<b>Total:-</b>	3.34 M <sup>2</sup>
12)	Window	2	0.90		0.90	1.62	M <sup>2</sup>
13)	VENTILATOR	2	0.45		0.45	0.41	M <sup>2</sup>
14)	<b>Guard Room Plinth filling</b>	1.00	4.00	3.00	0.60	7.20	M <sup>3</sup>
	Toilet Plinth filling	1.00	2.10	1.05	0.60	1.32	M <sup>3</sup>
						<b>Total:-</b>	<b>8.52</b> M <sup>3</sup>
	OTHERS						
1)	<b>MS gate</b>						
	Main Gate	2	2.50			2.00	no
	WICKET Gate	1	1.00			1.00	no.
2)	W.C. PAN	1	Nos				
3)	Wash Basin	1	Nos				
4)	Urin Pot	2	Nos				
5)	UPVC PIPE 4" dia	6	mt				
6)	Electric Fan	1	Nos				
7)	LED BULB 100 WATT	4	Nos				
8)	Bulb Holders	4	Nos				
9)	Electric wire	20	MT				
10)	PVC pipe for electric fitting	10	MT				
11)	Power switch Board	2	Nos				

DESIGN OF 20 KLD CAPACIT OFSTP			
Capacity	20	KLD	
Values adopted from CPHEEO manual on sewage treatment plant			
November 2013 Chapter 9 table 9.13 page 9-43			
Parameter	Value	Parameter	Unit
Quantitative Sludge	20		KLD
Colour	Black	Unobjectionable	
Odour	Smell like H <sub>2</sub> S	Unobjectionable	
Temperature	18°C-27°C	-	
pH	5.5-9.0		
total Solid	40000 0	≤100	Mg/L
total dissolved Solid	25000 0		Mg/L
Suspended Solid	15000 0	≤100	Mg/L
Volatile Solids	10000 0		Mg/L
Total BOD <sub>2</sub> 20°C	100	≤10	Mg/L
COD	2000	≤50	Mg/L
Oil & Grease	6000	≤10	Mg/L
Total Nitrogen TKN	700	-	Mg/L
N-NH <sub>3</sub>	150 00	-	Mg/L
Org-N	550 00	-	Mg/L
N-NO <sub>2</sub>	-	-	Mg/L
Total P	250	-	Mg/L
Alkalinity		-	Mg/L
total Coliform	100000	≤1000	Mpn/100 MI
Minimum values have been adopted between discharge standard into inland surface water and that for land for irrigation			
TREATED SEWAGE QUALITY			
	Auxiliary CPC INGT		
BOD 20°C	≤10	Mg/L	
Total Suspended Solid	≤100	Mg/L	
COD	≤50	Mg/L	
Al	≤10	Mg/L	
Cd	≤5	Mg/L	
Cr	≤50	Mg/L	
Cu	≤300	Mg/L	
Pb	≤100	Mg/L	
Hg	≤0.15	Mg/L	
Ni	≤50	Mg/L	
Ph	≤1000	Mg/L	
C/N Ratio	20:40		
Faecal Coliform	1000	MPN/100MI	
Quantity of Sewage Generated	20000.00	Lpd	
	20.00	KLD	
	20.00	Cum/da	
Raw Sewage Characteristics			
Average Sewage flow entering the treatment plant	20000.00	lpd	
Assumed Peak Factor	1.00		DEWATS
Peak Sewage flow entering the treatment plant	20000.00	lpd	
COD	25000.00	mg/Lt	
BOD	6500.00	mg/Lt	
TDS	15200.00	mg/Lt	
TSS	15000.00	mg/Lt	
pH	4.5 to 11.5		
Inlet Control GRIT Chamber			
Number of units	1	no	Controlled and controlled
total collection time (leading hour)	8	hour	
Quantity of flow Ave	3000 l/s per hour	beverage collecting barge pool vehicle	
	0.05	Cum/minute	

DESIGN OF 20 KLD CAPACIT FSTP			
C 00000 A 0000 F 00	20	KLD	
Assumed Detention period	14.00	minute	
Volume of the Inlet Chamber	0.70	Cum	
Assumed Depth of	0.50	m	
Area Required for Inlet Chamber	1.40	Sqm	
Assumed Length to Breadth Ratio	1.00		
Breadth of the Tank	1.20	m	
length of the Tank	1.20	m	
Procedure Details for Calculations C 00000 GRIT C 0000 ER 002 002 000 SWD			
<b>2 Screen Calculations</b>			
Peak Design Flow	0.000	Cum	
Assume Clear Spacing between bars	10.00	mm	20-50mm, pg.201 of CPHEEO Manual
Velocity ahead of screen V	0.40	m/s	pg. 202 of CPHEEO Manual
Area of Screen Channel, A 000/Va	0.00	m <sup>2</sup>	
Width	0.15		
Keeping Side Water Depth	0.25	m	
<b>OVER ALL Width of screen W</b>	<b>0.00</b>	m	
Width	0.00	m	
Water depth upstream, H 00 A/W	0.25	m	
diameter of bar	0.006	m	
Number of openings in chamber, W 0 X.o + (X - 1)t where , X = No. of Opening o = Clear Spacing between bars t = Thickness of bar	0.00	no	
Width	38.00	no	
Total effective width of opening, W 0 X.o excluding bars	0.372	m	
Assume Angle of Inclination	60.00	Degree	
Assumed Detention Period in the Screen Channel	5.00	Sec	
Assume Length of the Screen Chamber	2.00	m	
Width	0.00	m	
Inclined height of the screen, H	0.29	m	
Velocity through the screen, V 00 /H1 W	0.00	m/s	
Head loss thru screen in normal condition, $h_1 = 0.0729 V^2 - Va^2$	-0.01	m	less than 0.15 m hence 0
Head loss on 50%logging $h_1 = 0.0729 \cdot 2 \cdot V^2 - Va^2$	-0.01	m	less than 0.3 m hence 0
Water Depth downstream Hb, $Hb = a - b + Va^2/2g - V^2/2g + Ha$ -Headloss thru screen in normal condition	0.27	m	
Water Depth downstream Hb, $Hb = a - b + Va^2/2g - V^2/2g + Ha$ -Headloss thru screen in logged condition	0.27	m	
<b>Procedure Details for Screen 0 M 0 M 0 M SWD 0.2 M</b>			
Screen Area			
OD	00.00	mg/Lt	
CD	25000.00	mg/Lt	

DESIGN OF 20 KLD CAPACIT FSTP			
C 000000 A 0000 F 00	20	KLD	
<b>M 000000 r 00 000000</b>			
No. of tan	1		0 000 r 0000 00 d 00 00000 d 00
Computation of Settling Velocity Sto La			
Kinematic Velocity of Effluent assumed	0.0000011	m/s	
Particulate Diameter assumed	0.000150	m	
Settling Velocity	0.02	m/s	Pg.208,209 of CPHEEO manual
Reynold's number, Re=V/D/Kinematic velocity	2.73		
for Transition loss, V=0.707S-1d <sup>1.6</sup> v- 0.6-0.714	0.02	m/s	Pg.208,209 of CPHEEO manual
Actual Settling velocity	0.02	m/s	Pg.208,209 of CPHEEO manual
removal efficiency	491.36	um/m/d	
Assumed Removal Efficiency	75.00	um/m/d	
	368.52	um/m/d	
Actual Surface Over Flow Rate : /A	974	um/m/d	Pg 209-table no.125, a per table 11.1-it is 1555
V/n/[(1-η) <sup>0.125</sup> -1]			
<b>D 000000 000000</b>			
<b>P 000 F 00</b>	<b>20.00</b>	000 d 00	
Total Plan area of Grit Channel / peak/A	0.02	m <sup>2</sup>	
Actual depth of Grit Channel	0.00	m	
Length of Grit Channel	0.00	m	
Liquid Depth assumed	1.50	m	
Provide a depth for the Grit Storage	0.30	m	
<b>Pr 000d 000 D 000000 00 M 0000000 r 00 000000 00 00 000000 SWD 000 Fr 000000 rd</b>			
<b>r 000000 000000 00 r 000 d 000 00 000000 r 00 000000 00 000000 00 d 000 d 000</b>			
000 D R 0000	0	0	
C 000 D R 0000	0	0	
000 D R 000000 r 000000 r 000000	00	mg/Lt	
C 000 D R 000000 r 000000 r 000000	15000.00	mg/Lt	
<b>000 r 000000 r</b>			
Peak Design Flow	20.00	Cum/da	
Assumed Detention period	96	hour	
Volume of the Tan	80	Cum	
Assumed Depth of Liquid Column	3	m	
Area required for the equalization tan	26.66666667	Sqm	
No. of Tan Proposed	12		
area required for each equalization tan	2.222222222	Sqm	
Length to Breadth ratio	1		
Breadth of the tan	1.5	m	
Length of the tan	1.5	m	
<b>Pr 000d 000 D 000000 00 r 000000 r 000000 00 000000 00 SWD 2 N 000 000 Fr 000000 rd</b>			
<b>000 r 000000 r 000000 r 000000 r 000000 00 d 000 r 000000 r 000000 DRD 00</b>			





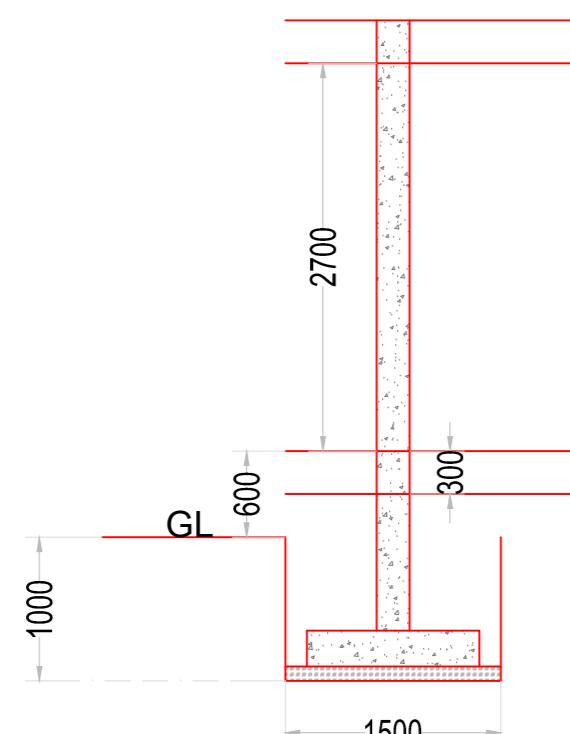


DESIGN <b>F 20 KLD CAPACIT FSTP</b>			
C Area A r F	20	KLD	
Area of the Tan	0.56	S m	
Square tan Size	0.70	m	
Round r 00 m			
<b>12</b> <b>Pr r S d F r</b>			
Average Flo	20.00	Cum/da	
Filter Operating hour	8.00	hr	
Operating lo	2.50	Cum/hr	
Filter Loading rate	2.00	Cum/hr/S m	
Area of the Filter required	1.25	S m	
Round FRP VESSEL 0"			
<b>13</b> <b>Pr d r F r</b>			
Average Flo	20.00	Cum/da	
Filter Operating hour	8.00	hr	
Operating lo	2.50	Cum/hr	
Filter Loading rate	2.00	Cum/hr/S m	
Area of the Filter required	1.25	S m	
Round FRP VESSEL 0"			
<b>14</b> <b>E D r D d r</b>			
DR	00		
CDR	00		
DR	00	mg/Lt	
CDR	22.95	mg/Lt	
<b>15</b> <b>F r d P r</b>			
Pr d F r d	20	C r	
	00	nd	
IN LINE			
DR	20.00		
CDR	20.00		
DR	00	mg/Lt	
CDR	18.36	mg/Lt	
<b>16</b> <b>TREATED WATER TANK</b>			
total Quantit o e lunt	20.00	CUM	
TOTAL LOSS IN PROCESS	15.0		
TOTAL TREATED WATER	17	CUM	
Pea Deign Flo	17.00	Cum/da	
Assumed Detention period	2	hour	
Volume of the Tan	4.25	Cum	
Assumed Depth of Liquid Column	1.2	m	
Area required for the tan	3.541666667	S m	
No. of Tan Proposed	1		
area required for each tan	3.541666667	S m	
Length to Breadth ratio	1		
Breadth of the tan	2	m	
Length of the tan	2	m	

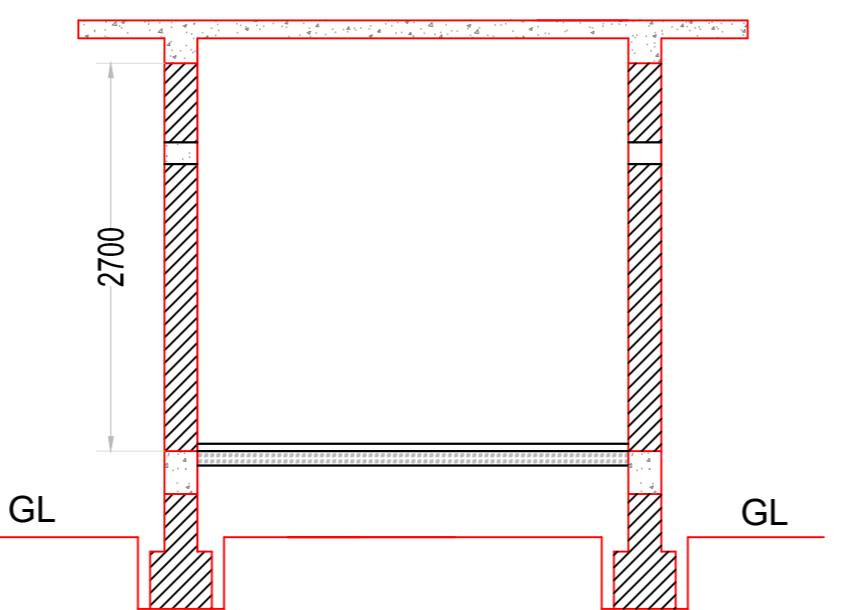
DEPARTMENT:  
MJP

PROJECT:  
20 KLD FSTP

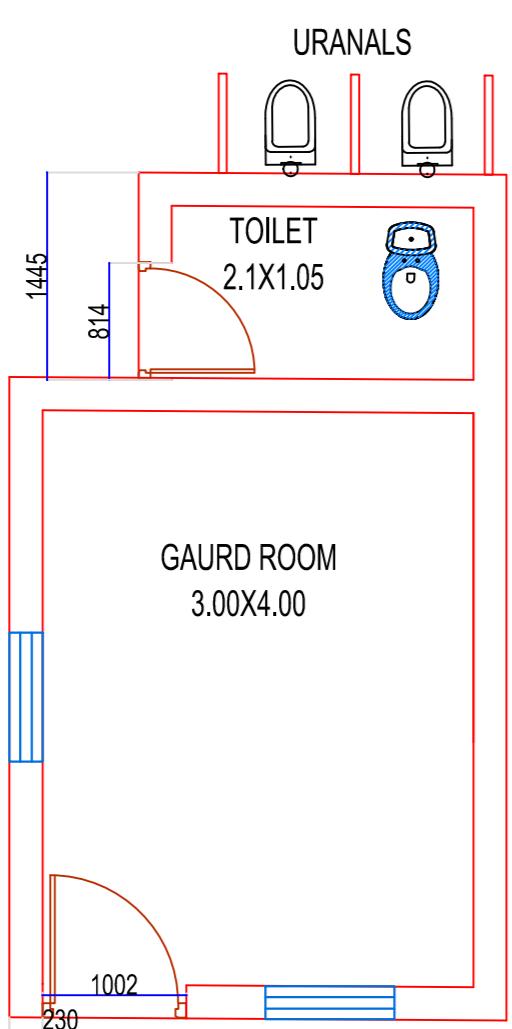
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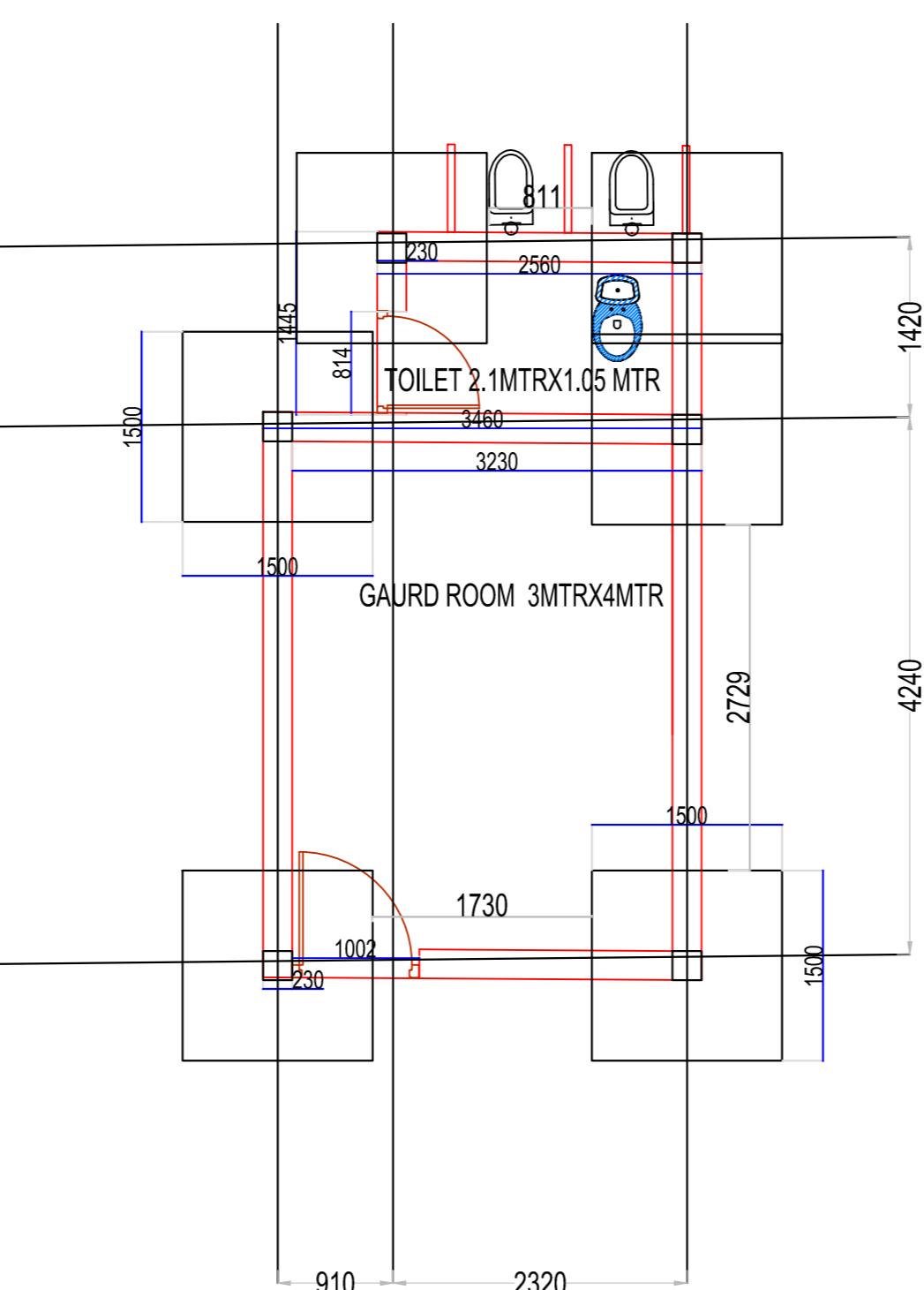
DETAIL OF CLOUNN



SECTION OF GAUARD ROOM



PLAN OF GAUARD ROOM&TOILET



CENTRE LINE PLAN OF GAUARD  
ROOM&TOILET

INDEX

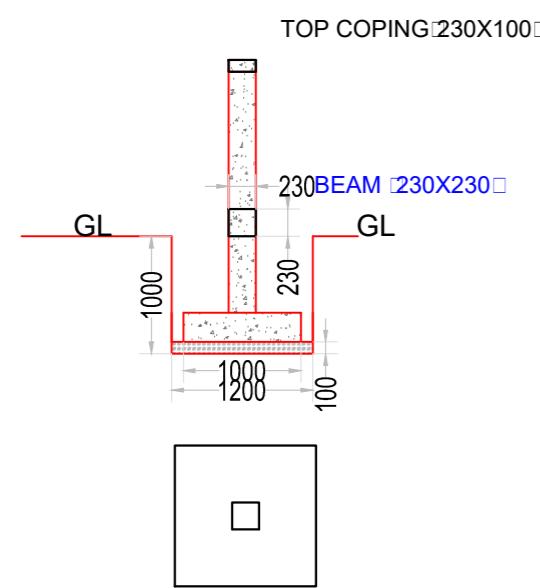
REINFORCED CEMENT CON.  
PLAIN CEMENT CONCRETE  
BRICK MASONRY.

DRAWING TITLE:  
20 KLD FSTP GAUARD  
ROOM TOILET CIVIL GA  
DRAWING

DRAWING NO.: DDB/PRO/GA-01 SHEET NO.: 01C/02

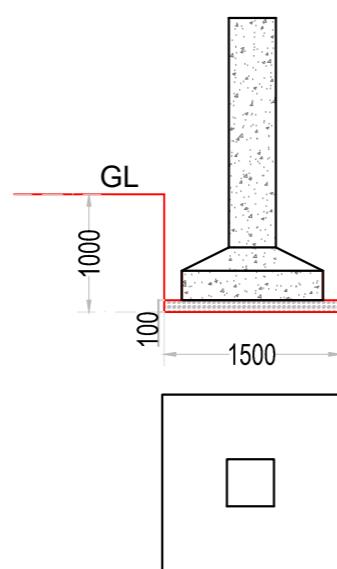
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CONTRACTOR

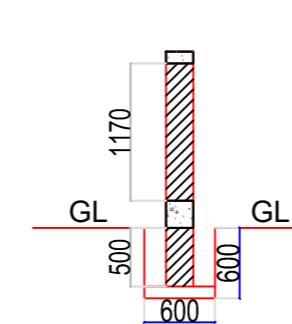


## DETAIL OF C2

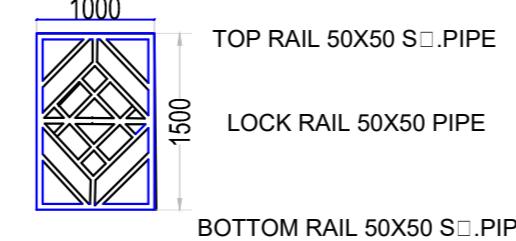
### 27 NO. □



**DETAIL OF  
C12 NO.□**



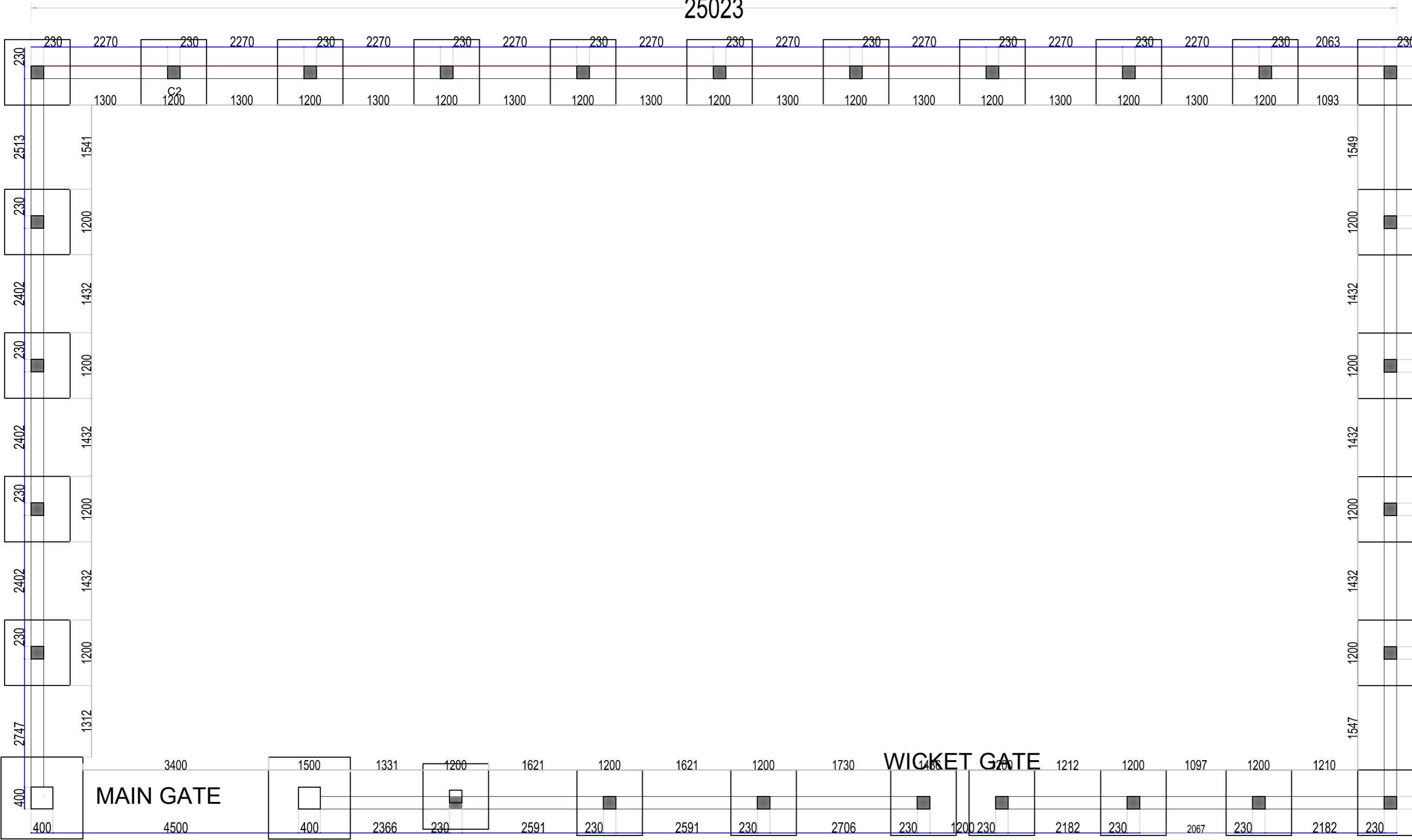
# MAIN GATE



## WICKET GATE



—25023



DEPARTMENT:	MJP
PROJECT:	20 KLD FSTP
<p><b>NOTE:</b></p> <p>1. ALL DIMENSIONS &amp; LEVEL ARE IN MILLIMETERS</p> <p>2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.</p> <p>3. ANY DISCREPANCY IN THIS DRAWING SHALL BE BROUGHT TO BE IN NOTICE OF CONSULTANT.</p>	

INDEX	
	REINFORCED CEMENT CON.
	PLAIN CEMENT CONCRETE
	BRICK MASONRY.

DRAWING TITLE: **□0 KLD FSTP □□□NDAR□**  
**WALL CIVIL CAD DRAWING**

<b>WALL CIVIL GA DRAWING</b>	
DRAWING NO.:	SHEET NO.:
DRP/DRG/CA-34	010/03

DDB/PRO/GA-01	01C/03
DATE:	SCALE:
	1:100

19.02.2021

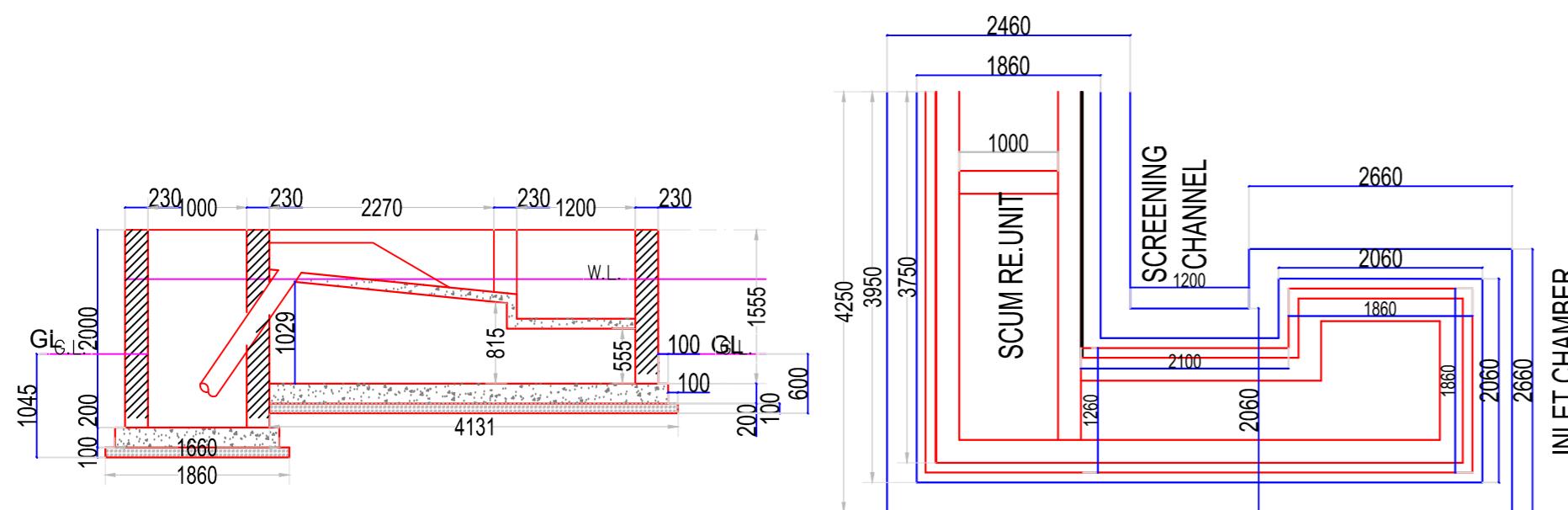
**DEPARTMENT:**

MJP

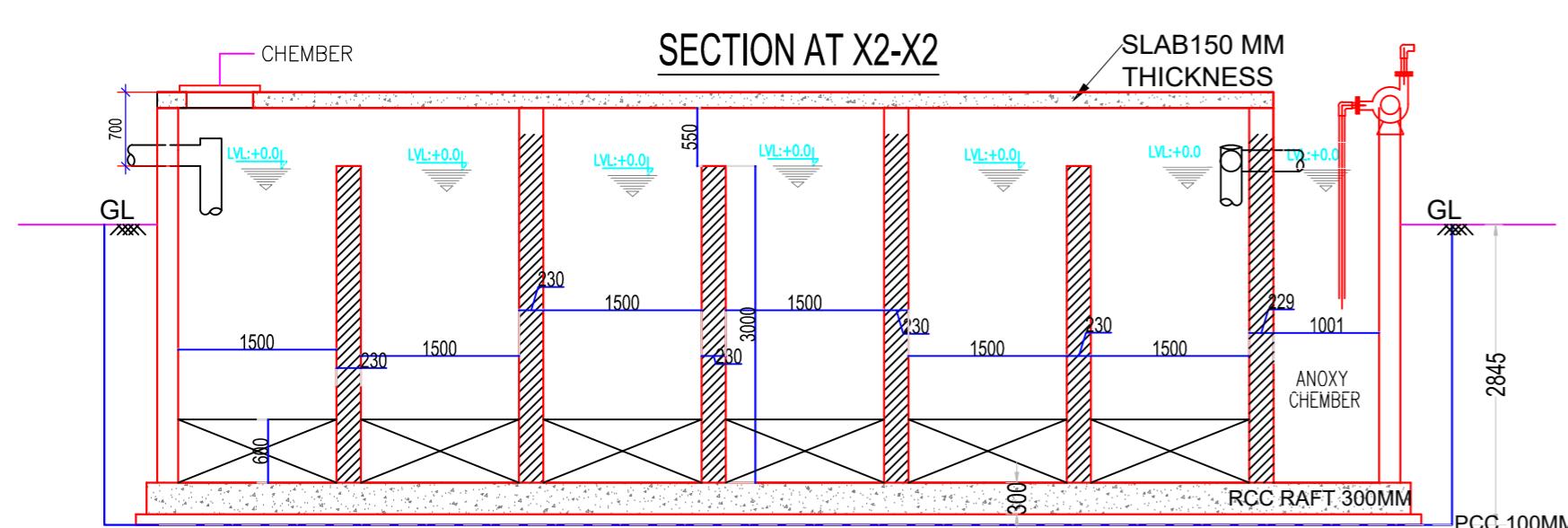
**PROJECT:**

20 KLD FSTP

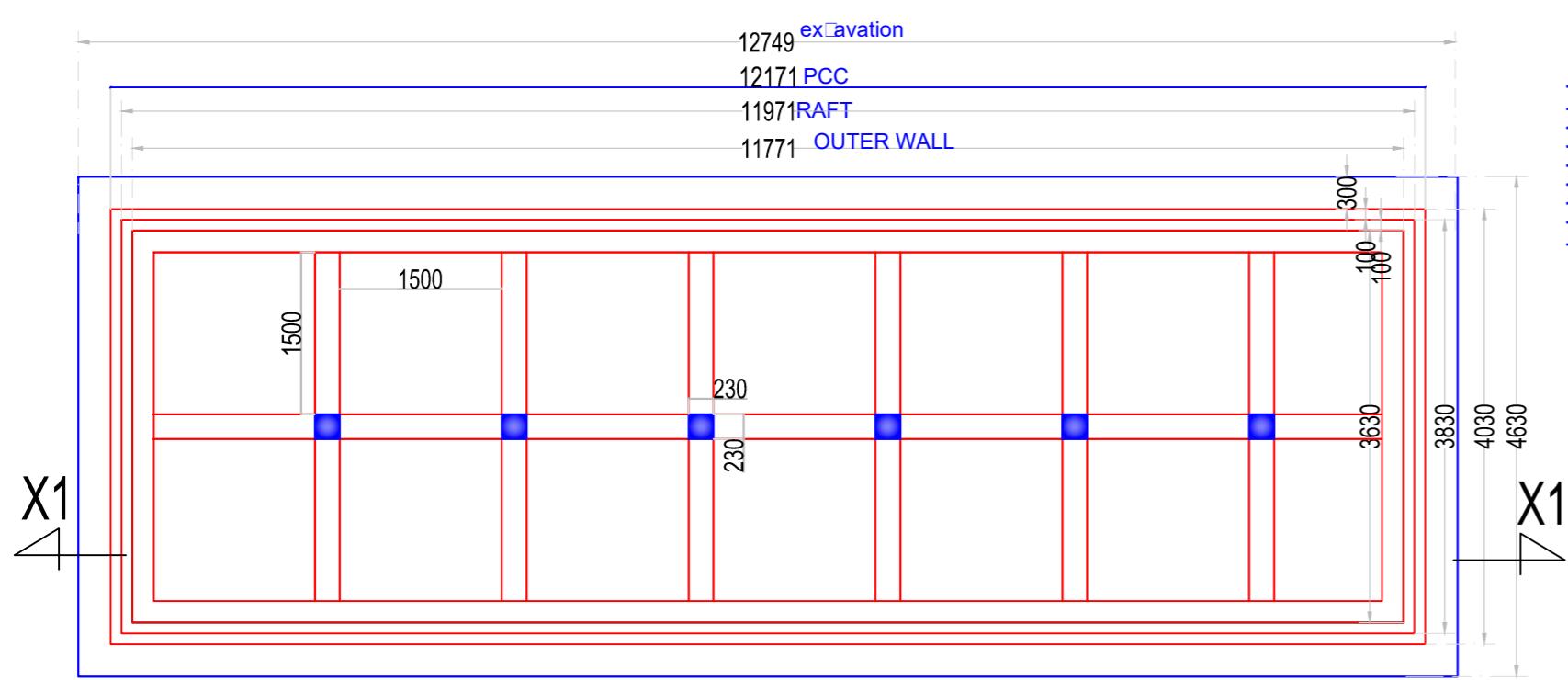
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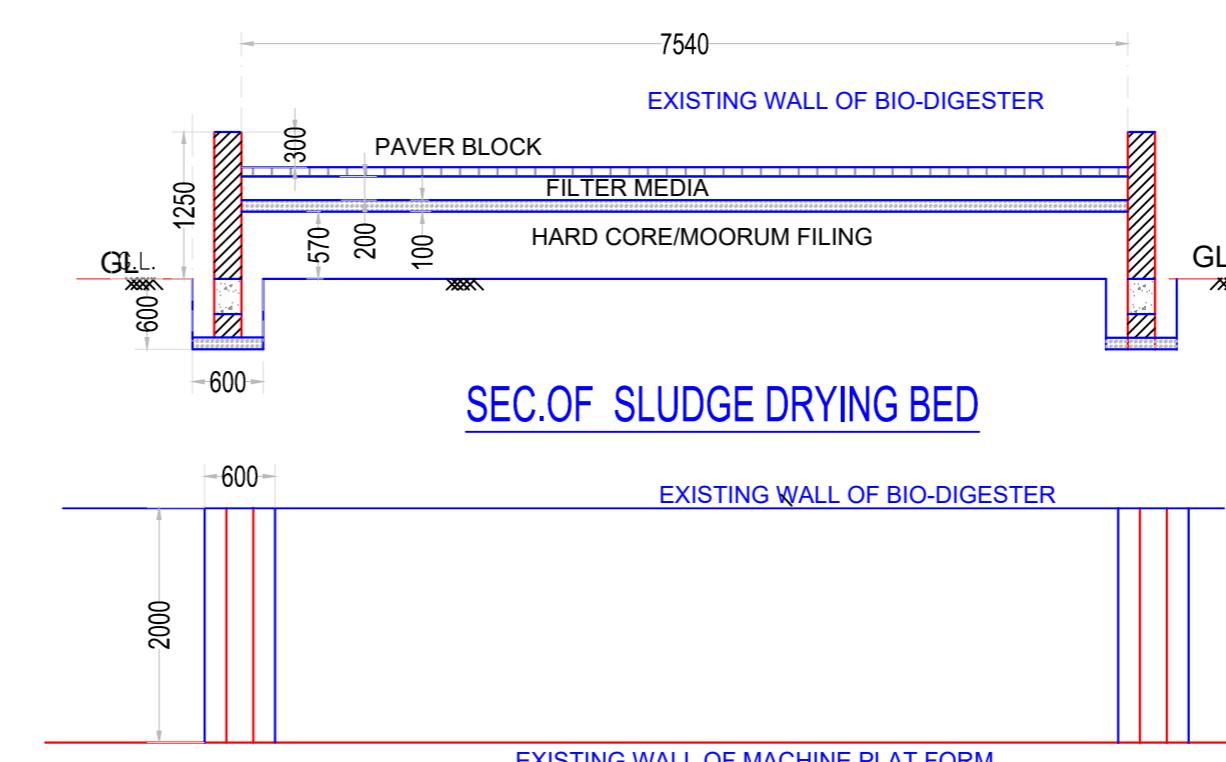
## SECTION AT X2-X2



## SECTION OF BIO-DIGESTER



## FOUNDATION PLAN FOR BIODIGESTER.



## SEC.OF SLUDGE DRYING BED

## EXISTING WALL OF BIO-DIGESTER

## EXISTING WALL OF MACHINE PLAT F

## INDEX

REINFORCED CEMENT CON.

## PLAIN CEMENT CONCRETE

DRAWING TITLE: \_\_\_\_\_

# □0 KLD FSTP F□□NDATI□N CIVIL GA DRAWING

DRAWING NO.: SHEET NO.:

PPB/PPO/CA 01

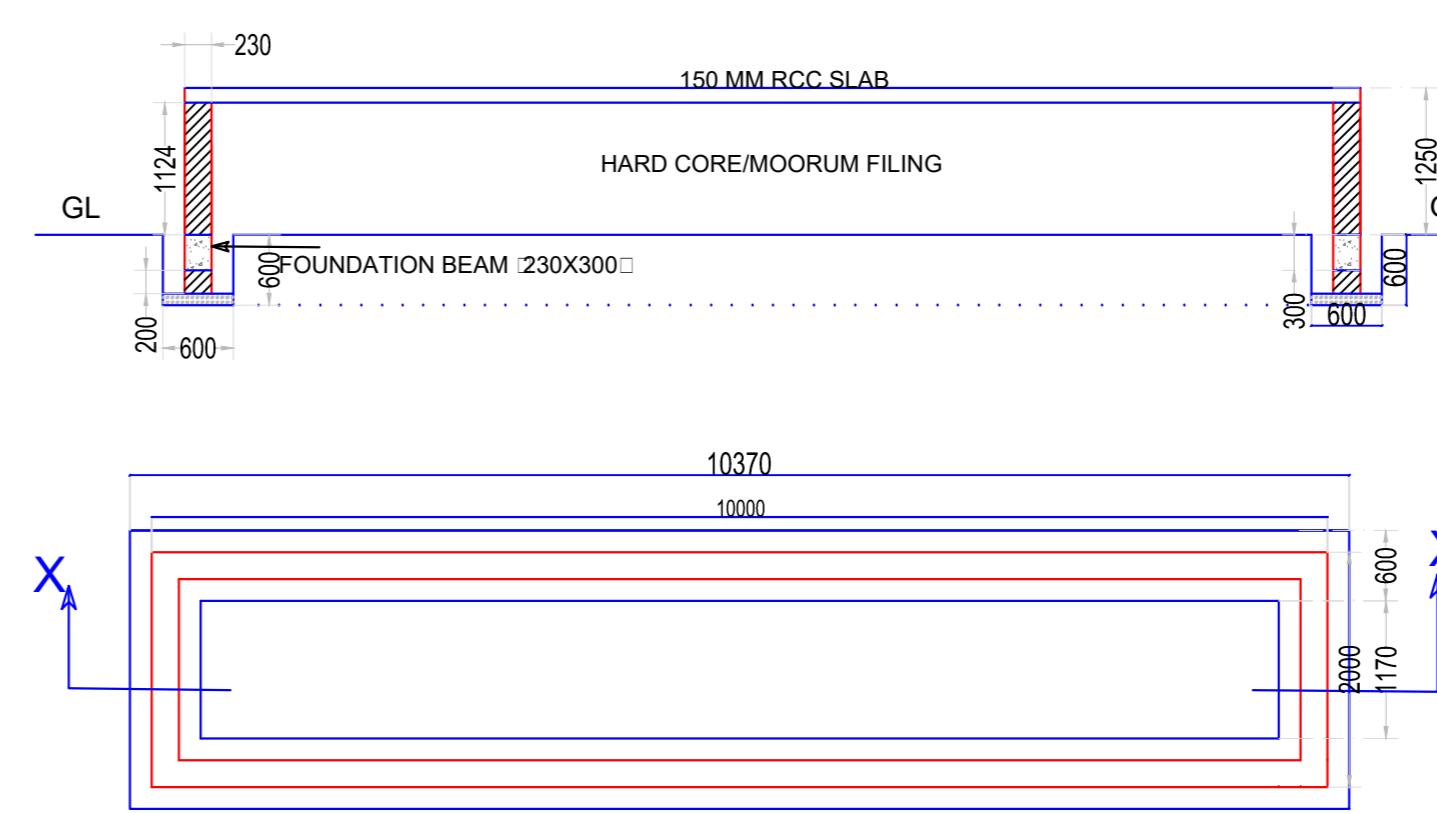
01C/01

DATE: SCALE: 0100/00

44/88

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19.02.2021

## CONTRACTOR



## MACHINE PLATFORM

